REGIONAL

Comprehensive Plan

Regional Open Space Program

Phase A Report ● July 31, 2006

SOUTHERN CALIFORNIA ASSOCIATION of GOVERNMENTS

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Introduction

The Southern California Association of Governments (SCAG) is updating its Regional Comprehensive Plan (RCP) to incorporate and advance the growth, infrastructure, and resource management strategies adopted by the Regional Council. The current update is built around SCAG's Compass Blueprint and 2% Strategy, which are the region's adopted growth vision and strategy.

Compass Blueprint was developed in response to the land use, transportation, economic, and environmental challenges facing the region with the projected addition of five million residents over the next 25 years. It is driven by four key principles: mobility (getting where we want to go), livability (creating positive communities), prosperity (long-term health for the region), and sustainability (preserving natural surroundings).

The 2% Strategy identifies communities in region (2% Opportunity Areas) where relatively modest changes to current land use and transportation trends would yield great benefits for the region as well as in local neighborhoods. The strategy calls for focusing growth in existing and emerging centers and along major transportation corridors, creating significant areas of mixed-use development and walkable communities, targeting growth around existing and planned transit stations, and preserving existing open space and stable residential areas. The underlying principle is that many small changes in many locations across the region is an effective and equitable way to meet the region's goals for improved mobility, livability, prosperity, and sustainability. The name of the strategy stems from the fact that the changes would need to occur on only 2% of the land in the region for substantial improvements to result.

Similar to the general plans of local governments, the RCP addresses specific areas of planning and resource management. However, unlike a local general plan, the RCP and its contents are not prescribed by State law. As currently envisioned, the updated RCP will have nine components and two special focus sections:

- Land Use and Housing
- Solid and Hazardous Waste
- Energy
- Air Quality
- Open Space and Habitat
- Economy
- Water
- Transportation
- Security and Emergency Preparedness
- Special Focus – Education
- Special Focus – Financial Strategies

Each component will have a similar structure and will include:

- A description of existing conditions, plans, and programs;
- A discussion of key issues, including an analysis of regional growth implications;
- An action plan, including institutional and funding mechanisms for implementation; and
- A tracking plan, with measurable performance criteria and outcomes.

As part of updating the RCP, the open space and habitat component is being revised and expanded to include a regional program for protecting open space resources (Regional Open Space Program)[1]. In part, development of the program is tied directly to the region's growth vision and strategy. Compass Blueprint and the 2% Strategy call for increased urban development and growth in key strategic areas while broadly supporting sustainability concepts and environmental protection. The region needs an open space protection strategy to balance its urbanization strategy. However, there also are other reasons for developing the program. Two of those reasons concern the Regional Transportation Plan (RTP) and possible reforms to the California Environmental Quality Act (CEQA).

The RTP context for the Regional Open Space Program is specific. The Program Environmental Impact Report (PEIR) prepared under CEQA for the 2004 RTP identifies updating the RCP open space and habitat component (and the associated interagency coordination and information sharing) as part of the mitigation for the significant impacts of future transportation projects and growth on the region's natural open space, wildlife linkages, and recreation areas. This makes the Regional Open Space Program part of the required mitigation for the 2004 RTP.

There also is a federal transportation-planning context for the program under the Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). SAFETEA-LU (which applies to federally-funded transportation projects) requires metropolitan planning agencies to 1) expand consultation with other agencies and affected parties during the RTP planning process and 2) include a discussion of mitigation in their RTPs identifying types of measures that may be implemented to avoid, reduce, and mitigate environmental impacts. SAFETEA-LU also encourages coordination with other types of planning activities affected by transportation, including planned growth, economic development, environmental protection, airport operations, and freight movement. In this context, the Regional Open Space Program would provide the framework both for early consultation on open space impacts and coordination of open space, growth, and transportation. It would be part of the mitigation program for future RTPs – including the RTP update currently being prepared by SCAG.

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[1] For planning purposes, the working definition of *open space resources* is "natural open space, including wildlife linkages; parks and other open recreation areas; open areas connecting or buffering land uses in developed areas; and open areas, including agricultural lands, that are important landscape features of the region's communities.

The CEQA reform context concerns pending State legislation that would streamline the review process for certain projects and allocate incentives to areas covered by a regional growth plan. As currently envisioned, an open space and habitat conservation component would be a required component of the regional growth plan and would need to address a broad range of open space issues. The Regional Open Space Program would be the habitat and open space component of the SCAG region's growth plan.

To help develop a program suited for these multiple purposes, SCAG retained a consultant team[2] to work in cooperation with SCAG's advisory groups and staff. The team began work in May 2006 on the first of two phases of program development.

Phase A entails 1) compiling a database from existing sources; 2) identifying the planning tools, goals, measures, and implementation strategies of existing plans and programs for open space resources in the region; 3) identifying the key issues to be addressed in the program and the methods for analyzing them; and 4) initiating an outreach program to involve SCAG members and other stakeholders in the planning process.

Phase B entails 1) conducting the analyses identified in Phase A; 2) developing the goals and implementation strategies for the program through an interactive process with SCAG members and other stakeholders, 3) coordinating development of the program with Compass Blueprint, the 2% Strategy, and RTP update, and 4) completing the details of the program for inclusion in the RCP.

This report describes the results of Phase A.

Database

In May and June 2006, the consultant team worked with SCAG staff to compile a database for the planning process. Priority was given to identifying datasets that cover the entire SCAG region or were generated as part of existing plans and programs for open space resources in the region. Primary sources include:

- SCAG
- SCAG members and subregional associations
- California Legacy Project Catalogue
- California Spatial Information Library (CalSil)
- California Digital Conservation Atlas
- California Environmental Resources Evaluation System (CERES)

[2] The consultant team is lead by Jones & Stokes and also includes Melendrez, Technology Associates International Corporation (TAIC), and Paul Beier, Ph.D.

- California Land Use Planning Information Network (LUPIN)
- California Natural Diversity Database (CNDDB)
- California Fire and Resource Assessment Program (FRAP)
- South Coast Wildlands Project
- Green Visions
- Greeninfo
- Conservation Biology Institute (CBI)

Based on the team's review to date, the available datasets are adequate for developing the Regional Open Space Program. However, the following gaps and limitations are noted.

Existing levels of open space protection. Existing levels of open space protection in all or part of the SCAG region have been analyzed and mapped by various entities. However, the analyses and maps depend heavily on baseline information about public and quasi-public land ownership. The problem is that the baseline ownership information is more accurate about large public holdings (e.g., State Parks, National Forests) than about local mitigation lands and permanent open space. Given the size of the SCAG region, it will not be possible to comprehensively update the protected lands database during Phase B. However, some updating will occur based on data about existing local and regional program. Updating and maintaining the protected lands database also could be proposed as part of the action plan for the Regional Open Space Program.

Vegetation (habitat) mapping. The scale and date of vegetation maps for all or part of the SCAG region vary widely. As part of Phase B, the potential for merging existing datasets will be examined. The consultant team also has access to the 2005 aerial imagery that SCAG is using to create a new land use map for the region. There is not adequate time to prepare a new vegetation map for the entire SCAG region based on the imagery, but the consultant team will use the imagery for spot-checking and site-specific mapping refinements.

Species occurrence. Existing conservation plans and programs and the CNDDB provide varying levels of detail about the known occurrence of plant, fish, and wildlife species in the region. The information is adequate for program-level analyses and planning. Field surveys will not be conducted as part of program development.

Community open space. The available datasets identify most types of open space and recreation lands associated with developed communities, such as parks, golf courses, preserves, etc. However, there is only a limited amount of regional data and mapping for other important features of community open space such as urban forests, community gardens, greenways, and pocket parks. This limits the degree to which issues associated with these features can be analyzed on regional scale and addressed in the Regional Open Space Program.

Parcel information. SCAG currently does not have but is in the process of acquiring parcel information and maps from its members. If parcel line maps become available during Phase B, they will be incorporated into the planning and evaluation process.

Bikeways and trails. Bikeways and trails are an important means of public access to open space areas. However, there is not a dataset or map that shows interconnecting local and regional bikeways and trails in the SCAG region. This limits the team's ability to assess bikeway- and trail-related open space access issues on a regional scale.

Existing Plans and Programs

All portions of the SCAG region are covered by one or more existing plan or program for open space resources. The plans and programs vary in terms of their origin and primary purpose and in terms of how or whether they entail land acquisition or other direct forms of open space protection. In general, there are eight types of existing plans and programs:

1. Open space and recreation elements of the region's local general plans, and the local programs for implementing the policies stated in those elements;

2. Regional-scale habitat conservation plans (HCPs) prepared by public agencies and public-private partnerships in compliance with the federal Endangered Species Act (ESA), California Endangered Species Act (CESA), and/or California Natural Community Conservation Planning (NCCP) Act;

3. Mandated management plans for public lands, such as the Southern California Forest Plan and California Desert Conservation Area Plan;

4. Integrated watershed management plans and strategies developed either for regulatory compliance purposes or to better coordinate land use planning by multiple interests;

5. Open space acquisition and habitat enhancement programs implemented by the California Resource Agency Conservancies and non-profit organizations and trusts;

6. Resource-specific conservation strategies, such as the South Coast Missing Linkages Project;

7. Open space and parkland acquisition programs implemented by public-private partnerships and individual conservancies; and

8. Open space planning strategies and initiatives, such as the Green Visions Plan.

Table 1 lists representative regional-scale plans and programs, excluding local general plans (see Attachment A for more information about these plans and programs).

In addition to those identified in Table 1 and Attachment A, there are hundreds of projects in various stages of implementation throughout the region. Attachment B provides a sampling of those projects in each county within the SCAG region based on the Natural Resource Project Inventory (NRPI) available through CERES. (Note: Not all of the projects in the inventory are open space related.)

Table 1. Representative Regional-scale Open Space Plans and Programs

Program	County					
	Ventura	Los Angeles	Orange	Riverside	San Bernardino	Imperial
California Desert Conservation Area Plan		X		X	X	X
Central/Coastal Orange County Natural Community Conservation Plan			X			
Coachella Valley Multiple Species Habitat Conservation Plan				X		
Common Ground		X				
Green Visions Plan	X	X	X			
Imperial County Irrigation District Natural Community Conservation Plan.						
Lower Colorado River Multiple Species Conservation Plan					X	X
Los Angeles River Greenway		X				
Matilija Dam Ecosystem Restoration Project	X					
Missing Linkages Project	X	X	X	X	X	
San Bernardino Valley Water Conservation District Land Management and Habitat Conservation Plan					X	
Santa Ana Integrated Watershed Plan			X	X	X	
Santa Ana River Trail and Greenway Project			X	X	X	
Santa Clara River Enhancement and Management Plan	X	X				

Program	County					
	Ventura	Los Angeles	Orange	Riverside	San Bernardino	Imperial
Santa Clara River Parkway Project	X					
Southern California Forest Plan		X	X	X	X	
Southern California Wetland Restoration Project	X	X	X			
Southern Orange County (Rancho Mission Viejo) Natural Community Conservation Plan			X			
Trust for Public Land Los Angeles Natural Lands Program		X				
Trust for Public Land Orange County and Inland Empire Program			X	X	X	
Trust for Public Land Parks for People -- Los Angeles		X				
The Wildlands Conservancy Save the Saints Program		X	X	X	X	
Western Riverside County Multiple Species Habitat Conservation Plan				X		

Issues and Approaches

At this stage in the planning process, five key issues need to be addressed:

- How to determine the appropriate scope of the program (how comprehensive or focused should it be)
- How to establish the basis for setting regional goals for conserving habitats and wildlife linkages (natural open space)
- How to establish a regional framework for examining and addressing community open space issues
- How to factor in CEQA and SAFETEA-LU

The underlying consideration in all of these issues is what role could or should SCAG have in open space planning and protection.

Scope of the Program

Consistent with the purpose of the RCP, the Regional Open Space Program can be as comprehensive and far-reaching as SCAG's members want it to be. However, as demonstrated by many existing projects in the region, the most effective programs also are the most focused.

To establish a preliminary focus for the SCAG program, the consultant team has created a "snapshot" of open land use types of the region and has proposed an organization and focus for the planning process.

Snapshot of "open" land use types. Using SCAG's land use database (based on 2001 aerial imagery), the team identified the types and extent of various open space resources in the region. For purposes of this exercise, the following land use classifications were identified as "open" types: open space and recreation lands, water, agricultural lands, and vacant lands (see Table 2 for land use classifications that were used to identify "open" types). As indicated in Figure 1, these types account for 92% of the region's total area. However, as shown in Table 3, the mix of "open" types within subregions varies widely, as does the amount of land actually used for open space and recreation purposes (see Attachment C for additional detail and graphs). This snapshot of "open" land use types in the region does not consider ownership, level of protection, public use, or ultimate disposition of the lands. Its primary value is to illustrate the vast extent of the SCAG region, differences among SCAG subregions, and the difference between perceived "open" spaces and permanent open space.

Figure 1. "Open" and Other Land Use Types in the SCAG Region (by percentage)

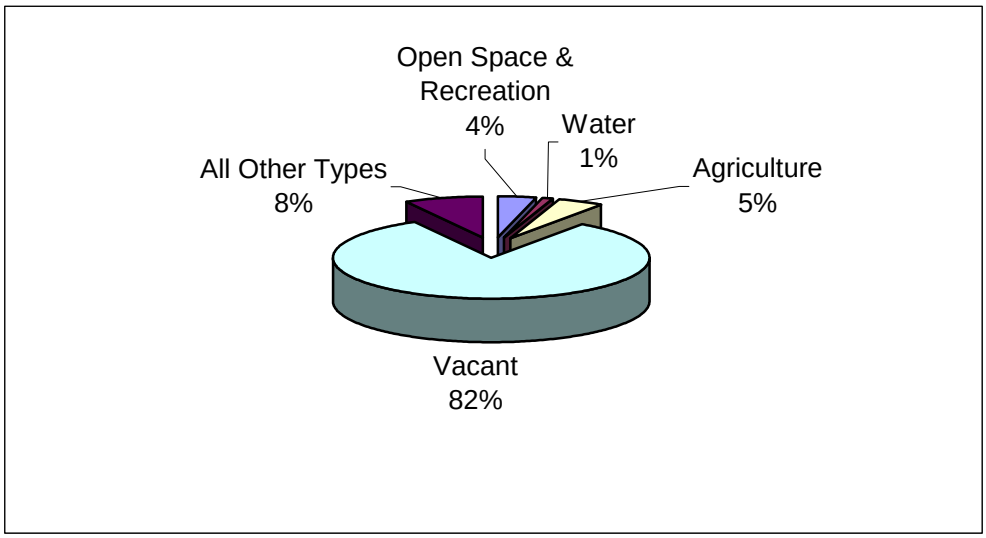


Table 2. Description of the Land Use Classifications Used to Identify "Open" Types

Open Space and Recreation
• **Beach Park**: all public and private beach parks; includes bathhouses, barbecue pits, parking areas, sports areas, as well as the beach area. • **Golf Courses**: public and private courses including driving ranges, greens, fairways, links, hazards, buildings, and parking areas. • **Local Parks and Recreation**: neighborhood, city, town, or community parks, and sports fields, and their associated parking facilities. • **Other Open Space and Recreation**: other public and private recreational facilities; includes camps, campgrounds (unless within a regional park), outdoor shooting ranges, ski areas, marinas, driving ranges not associated with a golf course, and maintained grass areas not used or designated as a local park. • **Regional Parks and Recreation**: parks designed to serve a regional area; includes all facilities within the park, such as campgrounds, marinas, or boat launching facilities. • **Specimen Gardens and Arboreta**: botanical gardens or arboreta devoted to preserving living specimens of vegetation for scientific or cultural purposes. • **Wildlife Preserves and Sanctuaries**: public and private facilities; areas devoted to the preservation of wildlife species and habitats; includes zoos, wild animal parks, duck ponds, exotic animal farms, etc.
Water (>2.5 acres in area)
• **Harbor Water Facilities**: the water portion of harbor facilities; includes slips and berths where the ships load and unload, the shipping channels, and outer harbor area within the outer jetty. • **Marina Water Facilities**: the water portion of marina facilities composed primarily of the boat mooring areas. **Water Within a Military Installation**: water bodies within a Military Installation • **Water, Undifferentiated:** all open water bodies not associated with water storage; and all water bodies associated with water storage that are greater than 5 acres in size; includes oceans, lakes, reservoirs, golf course ponds, rivers, estuaries, and channels. The water must occur perennially.
Agriculture
• **Dairy and Intensive Livestock, and Associated Facilities**: large, specialized livestock and other specialty farms with a high concentration of animal population in a relatively small area (such as beef cattle feed lots, dairies, hog farms, and goat farms). • **Horse Ranches**: commercial and non-commercial horse ranches, stables, tracks, barns, and corral areas, and improved pastureland. • **Irrigated Cropland and Improved Pasture Land**: all irrigated field and row cropland areas, and irrigated improved pastureland. • **Non-Irrigated Cropland and Improved Pasture Land**: all non-irrigated cropland, including dry-farmed field crops such as peas, beans, barley, oats, and hay. • **Nurseries**: land managed for the production of ornamental trees, plants and flowers, vegetable seedlings, seed farms, sod farms, and wholesale greenhouses. • **Orchards and Vineyards**: commercially productive tree, bush, and vine crops. • **Other Agriculture**: other miscellaneous agricultural facilities such as storage facilities, dairy fertilizer piles, poultry manure spreading grounds, hydroponic farms, fish hatcheries, apiaries, and worm farms.
Vacant
• **Abandoned Orchards and Vineyards**: orchards and vineyards, formerly productive, now abandoned and not in commercial production. • **Beaches (Vacant)**: vacant coastal beach areas not associated with an existing beach park. • **Former Military Vacant Area**: all large areas of undeveloped lands within a former military installation; includes agricultural areas within the military reservation. • **Vacant Undifferentiated**: represents most occurrences of vacant land; vacant land in a natural state, containing tree, brush/shrub, and/or grassland vegetation with no or few significant structures or improvements/ • **Vacant With Limited Improvements**: areas where streets have been laid in a subdivision pattern, but no further building or improvements have occurred over time.

Source: SCAG 2002 Update to Land Use Code Descriptions and Key Signatures for Aerial Land Use Study

Table 3. "Open" and Other Land Use Types by SCAG Subregion (Acres)

Land Use Type	Ventura	No LA Co	Las Virgenes Malibu	So Bay Cities	LA City	Westside Cities	Arroyo Verdugo	Gateway Cities	San Gabriel Valley	Orange Co	Western Riverside	Coachella Valley	San Bernardino Co	Imperial Co	Total
Open Space & Recreation	7,727.9	10,027.7	1925.5	3,082.4	9,646.8	871.5	867.1	5,609.2	11,241.5	17,498.2	37,144.9	690,213	134,456.1	12,969.1	943,280.9
Water	5,417.3	7,614.5	267.2	335.6	3,975.8	406.5	1.8	10,815.8	1,150.3	4,519.2	17,494.8	47,343.3	17,559.6	196,613.4	313,515.1
Agriculture	115,290.7	75,792	1035.9	607.9	1890.1	0.1	59.5	1342.9	2,822.2	11,706.5	150,679.5	177,243.7	69,858.1	505,753.4	1,114,082.5
Vacant	937,352.9	1,388,949.1	83,817.4	5,536	75,259.8	715.9	13,880.6	6,777.9	50,168.3	219,229.9	1,101,907.6	2,131,084.7	12,216,489.2	2,092,295.2	20,323,464.5
All Other Types	108,254.1	114,770.3	17,053.3	64,863.7	231,552.6	16,160.3	25,253.9	172,777.6	162,609.5	258,589.0	228,647.0	94,883.0	429,652.0	60,576.0	1,995,643.0
Total	1,173,776.0	1,596,643.5	104,081.2	74,425.6	322,322.5	18,154.3	40,062.9	197,321.0	227,988.8	511,416.6	1,533,963.0	3,140,051.3	12,876,246.8	2,868,181.6	24,684,635.1

Source: SCAG 2002 Land Use Dataset.

Organization and focus of planning process. To focus development of the program, the consultant team proposes to group open space resources into two categories – natural open space and community open space -- and develop program components for each category.

- The natural open space component will focus on areas with regionally unique or threatened biological resources, large contiguous blocks of natural open space, and areas that link large blocks of natural open space.

- The community open space will focus on recreation areas that function as regional facilities, open space that serves the daily needs or defines the character of local neighborhoods, and open space that connects or buffers land uses in developed areas.

Both components will address the open space function of agricultural lands.

To provide additional focus during the planning process, the following questions will be asked and answered as both components of the program are developed:

1. Are we duplicating an existing program or plan?
2. Are we complementing, linking, or filling a gap in existing programs and plans?
3. Have we addressed the RTP mitigation requirements?
4. What is the link to Compass Blueprint and the 2% Strategy?

The answers should always be “no” to question 1 and “yes” to questions 2 and 3. Question 4 triggers a cross check with the region’s growth vision and strategy.

Basis for Natural Open Space Conservation Goals

Because of the nature of the resource, the conservation goals of the program for natural open space will need a biological basis. In addition, the goals will need to take into account the conservation programs and priorities of the many approved HCPs and related programs in the region. To do this, the consultant team will conduct an analysis using methods similar to those used to develop the approved HCPs and those used to identify and evaluate wildlife linkages in the South Coast Missing Linkages and other projects. The analysis will:

- Examine existing levels of protection for regionally important natural open space, including linkages that are critical to sustaining the region’s ecosystems;

- Identify areas where these resources are most at risk from RTP and associated growth impacts,

- Identify options for conserving these resources and mitigating RTP impacts through a regional program, and

- Identify potential focus areas and priorities for the regional program.

The key steps in the analysis are outlined below. Attachment D provides additional information about the South Coast Missing Linkages Project and its relevance to the SCAG program. Attachment E provides additional information about the methods used for linkage analysis.

1. Identify core habitat blocks and landscape linkages

a. Use the regional vegetation/land cover GIS layer and roads layers to identify and evaluate natural open space in the SCAG region.

   i. Use the aerial imagery as needed to confirm assumptions about GIS data.

   ii. Continue to research other available data layers to identify other potentially useful sources of information.

b. Import potential linkages from the August 2001 Statewide Missing Linkages report (see Attachment D).

c. Categorize all natural open space (including public and private land) as one of four types:

   i. Core habitat area: Large areas of predominantly natural open space. Criteria will be developed to define "regional significance" including a reasonable size threshold for regionally significant core areas (e.g., at least 1,000 to 5,000 acres) and perimeter to area ratio to differential broad core areas from narrower linkages.

   ii. Potential landscape linkage: Lands that may provide biotic connectivity between two or more core habitat areas. Landscape linkages are generally narrower than core areas or of lower habitat quality than core areas (e.g., fragmented by roads, development or agriculture). Landscape linkages are of two types:

      - Potential Wildland Linkages: Areas of mostly private, tribal, or developable public land between core habitat areas. Most of the potential landscape linkage should be dominated by natural vegetation, but some other land uses, such as agricultural land and low-density rural residential areas, may be included.

      - Potential Linkages Across Roads: These occur where a highway or other linear human-created infrastructure potentially divides core habitat areas, but could provide a biotic linkage if road

crossing structures are integrated with roadside barriers that direct wildlife through the crossing.

(See Attachment E for additional details about linkage analysis.)

iii. Satellite fragment: Patch of habitat smaller than the threshold for a regionally significant core habitat area, but near enough to a core area or other satellite fragments to have some habitat connectivity through landscape linkages.

iv. Isolated fragment: Patch of habitat smaller than the threshold for a regionally significant core habitat area that is isolated by distance or an impermeable isolating barrier with no habitat connectivity through landscape linkages. While in some cases isolated fragments (e.g., less than 1,000 acres) may contain species or habitats not found in other core or linkage areas, these fragments are not the focus of this planning exercise. They may be addressed in a species/habitat component of the urban open space analysis.

d. Develop criteria and assumptions for determining boundaries and size thresholds of core areas and for determining locations and types of landscape linkages.

e. Using criteria and assumptions above, delineate cores and linkages.

2. Evaluate the biological resources in terms of biological Value (type and condition) and rank the quality of the resources.

a. Type: Quantify the acres of each habitat type in each core or linkage in combination with other environmental factors (slope, elevation, climate data, soils, or by ecoregion). Note that coarseness of vegetation data layer can be divided into biologically distinct subtypes using other environmental variables (e.g., chaparral at low elevation vs. chaparral at high elevation; or riparian scrub in coastal zone vs. riparian scrub in desert slope)

b. Condition: Evaluate the degree of "wildness." Note that we only have coarse vegetation data, so there is no indication of the condition of these general vegetation types; however, we can use other indicators of habitat disturbance to infer the habitat condition, such as combination of roadlessness, number of structures, obvious clearing, urban edge, fire history, parcel size if available, and public/private ownership, etc.

c. Uniqueness: Evaluate the degree of uniqueness or irreplaceability of the biological resources in each core or linkage based on the degree of overlap with other core and linkage areas.

d. Create a ranking scheme to rank core habitat areas and linkages based on type, condition (these are available in the Missing Linkages analyses for linkages, but not for core areas), and uniqueness and rank them. Note that the ranking scheme would also be applied to the satellite and isolated fragments. The fragments would presumably always rank lower and not be determined to be regionally significant unless they contained unique biological resources.

3. Evaluate the current or anticipated level of risk to the biological resources (GAP analysis)

a. Develop a Resource Management Status (RMS) layer (current land use/ownership patterns and status of management inferred based on management/ownership entity – e.g., USFS, BLM, Private).

b. Develop a General Plan (GP) Land Use (generalized for SCAG area) overlayed with Planned Transportation for future land use layer.

c. Overlay current RMS and future GP Land Use to identify which resources are protected and which are not, and which are at near-term future risk because planned land use affects key core or linkage areas. This identifies the anticipated level of threat to a given core or linkage area.

4. Prioritize core areas and linkages

a. Prioritization in this step is a consideration of the value rank and the threat rank. For example, a moderate value area could have a high threat and therefore a higher priority than a high value area with a very low threat rank.

b. Based on ranking for biological value (resource type and condition) and level of risk (GAP analysis) prioritize core habitat areas and landscape linkage.

As part of the process, the consultant team will convene a workshop to present the methods and preliminary results to biologists, planners, and others involved in the region's existing plans and programs. If needed, experts from outside the region also will be invited to participate. Comments from the participants will be used to refine and adjust the approach as needed. The methods and results also will be presented to the Open Space Working Group, RCP Task Force, and various stakeholder groups.

Following public review of the maps and priority rankings, the consultant team will work with the Open Space Working Group and others to develop quantifiable goals for each core and linkage and conservation strategies for achieving those goals. The goals and strategies ultimately will become part of the action plan for the Regional Open Space Program.

Regional Framework for Community Open Space

Because the available datasets and the issues are more localized than those regarding natural open space, development of the community open space component will require a different approach. Here the key issue is how to establish a regional framework for examining, and then addressing, community open space issues.

To establish the framework, the consultant team will use a combination GIS analyses and case studies to examine issues on a subregional basis with a special focus on 2% Opportunity Areas. Key issues to be examined include:

- The existing mix of and opportunities for community open space types;
- The ratio of existing and planned open space to number of residents;
- The means and degree of access to open space resources;
- The growth-related and socioeconomic factors affecting the above.

The results will be used to develop a regional strategy for:

- Maintaining or improving open space-to-population ratios as communities grow;
- Maintaining or improving access to open space resources and recreation areas by the broadest range of the population;
- Augmenting the functions and values of community open space through greenbelt, urban forest, and related programs; and
- Mitigating RTP impacts to community open space.

The key steps in the planning process are outlined below.

1. Identify regionally important recreation lands within the SCAG region.

a. Use SCAG's land use and general plan database to identify regionally important recreation lands that that are 50 acres or more in size and serve communities within a 30-mile radius, including but not limited to regional parks, sports parks, large urban parks, beaches and urban state park lands (such as the Cornfield, Los Angeles State Historic Park and Taylor Yard, and Rio De Los Angeles State Park.) Note the size and service area criteria for defining regionally important recreation lands may be revised during the analysis.

2. Compile additional information on SCAG member community open space policies and programs

a. Review OPR Planners Book of Lists to identify jurisdictions with Healthy Communities and Environmental Justice policies and plans in place.

b. Survey SCAG members regarding their current policies and programs for park/recreation needs analysis and service standards, urban forestry or related program, open space requirements for new communities and infill development, sustainability standards (relating to landscape and site planning), bikeway and trail system planning, and community gardens policies or programs.

3. Select up to seven communities in a range of SCAG subregions to serve as case studies for analyzing local community open space and linkage/buffer issues.

a. Select the case study communities based on the following criteria:

i. availability of data

ii. representative sampling of a range of community character from developed/ urbanized, to developing/ suburban, to rural communities within the region

iii. communities that are identified as 2% Opportunity Areas in Compass (specifically those 2% areas other than the more generalized Compass Principles Priority Areas.) Within the 2% Opportunity Areas identified, emphasis in selecting case study communities will be on those areas identified as City Centers, projected to be employment and residential centers, and Priority Residential Infill Areas, with the potential to provide regional and subregional transportation benefits as it absorbs its share of the regional residential growth, with Bus Rapid Transit Corridors, Rail Transit Stops as a third criteria for consideration.

iv. particular richness or lack of open space already built or planned

v. areas with populations that include low-income, minority, and under represented groups

b. In the selected case study communities:

i. Identify open space that serves the daily needs or is important to the character of local neighborhoods, including but not limited to community parks, school parks, neighborhood parks and mini-parks.

ii. Also identify, where possible, community open space linkages and buffers, such as linear parks, parkways, greenways in terms of natural (river) corridors and man-made (revegetated or manufactured) corridors, trails, community gardens (if feasible), and urban forests.

4. Establish criteria for evaluation, and analyze, regionally significant community open space in terms of availability, accessibility, and facilities in the SCAG region, considering subregional differences as appropriate and necessary.

a. Identify criteria for evaluating regionally important recreation areas based on size of the facility, amount and type of population serviced, accessibility, and uniqueness (in terms of open space niche filled).

i. Correlate existing and planned regional recreation areas with population, in terms of numbers of open space acres provided per 1000 population. The range of acres per thousand standards set for communities is generally from two to ten acres per 1000 people. Attachment F provides a summary of standards used by various planning entities.

ii. Identify the communities served by existing and planned facilities and identify under-serviced areas.

iii. Correlate existing and planned facilities with access. Access can be measured in terms of proximity to existing or planned roads, transit routes, and bikeway/trail systems.

5. Identify criteria for evaluating locally important community open space based on size, type of open space, population serviced, accessibility, and distribution (in terms of location in proximity to population).

a. If feasible, identify criteria for evaluating community open space linkages and buffers based on accessibility, quality, and function. Criteria might include trail miles or area per population, linkage to destination, urban forestry, sustainability policies, and regionally appropriate plant palettes. Criteria will be derived from existing plans and programs, such as the urban forestry programs identified in Attachment G.

i. Correlate the existing and planned community space in the case study community with low-income, minority, and under represented groups.

ii. Identify areas served and underserved by the open space system.

iii. Correlate existing and planned community open space with access.

iv. If the case study community is a 2% Opportunity Area, correlate existing and planned open space with the identified land use scenarios to determine if conflicts exist between areas proposed for or developed as community open space and areas identified as candidates for development intensification.

As part of the process, the consultant team will coordinate with the demonstration projects of Compass Blueprint and the 2% Strategy to present community open space issues and options and solicit comments on proposed approaches. The feedback will be used to refine and adjust the approach as needed. The issues and approaches will be presented to the Open Space Working Group, RCP Task Force, and various stakeholder groups.

Following completion of the steps above, the consultant team will work with the Open Space Working Group and others to develop quantifiable goals and a regional strategy implementing a community open space program as part of the overall Regional Open Space Program and as part of the 2% Strategy.

CEQA and SAFETEA-LU Considerations

CEQA and SAFETEA-LU considerations include:

1. CEQA requirements that apply to the program as mitigation for RTP impacts;

2. Environmental justice considerations, both under CEQA and the National Environmental Policy Act (NEPA); and

3. Consultation and coordination with other planning activities.

CEQA requirements. To serve as CEQA mitigation for RTP impacts on habitat and open space, the Regional Open Space Program must do the following:

- Avoid, minimize, rectify, reduce, or compensate for significant impacts identified in the EIR for the RTP update. This can be achieved through policies in the Habitat and Open Space Chapter, provided that they are feasible and fully enforceable.

- Identify the entity, either SCAG or some other agency, that can and will implement the policies. The mitigation set out in the policies must fit into the regulatory scheme of the agency. If the mitigation measure calls for coordination between agencies, it must also establish a program for that cooperation or identify an existing program that will be used.

- Provide performance standards or feasible options for mitigation. Performance standards will provide the framework for the development of more detailed, project-specific mitigation. The performance standards are intended to demonstrate that the mitigating policy will do what it intends to do. Where the RTP identifies particular projects, the mitigation policy will need to be more specific than where the RTP is discussing broader programs.

The checklist in Table 3 will be used to guide development and review of the program as part of the RTP mitigation program under CEQA.

Environmental justice considerations. Environmental justice considerations are relevant to the Regional Open Space Program for a variety of reasons, ranging from local policies in the SCAG region to NEPA requirements tied to SAFETEA-LU. The NEPA context is important because, among other things, SAFETEA-LU allows state agencies (in this case, CALTRANS) to assume the responsibilities for NEPA compliance for federally funded transportation projects.

Presidential Executive Order 12898 (February 11, 1994) establishes the requirement that federal agencies consider whether their actions will result in any adverse environmental impacts on low-income and minority communities that are disproportionately adverse compared to impacts on the general population. All federal agencies have implemented the executive order by requiring environmental justice to be considered as part of the NEPA review process for projects (see http://www.fhwa.dot.gov/legsregs/directives/orders/6640_23.htm for policy adopted by the Federal Highway Administration [FHWA]). Although not a required part of the CEQA process, many state agencies have adopted environmental justice policies that require outreach to low-income and minority residents. For example, the California Resource Agency has an environmental justice policy under which all departments are required to consider environmental justice in their programs and project decisions; and SCAG has an environmental justice policy that pertains to the RTP.

Two questions that often arise relating to environmental justice are: 1) Does the existence of a disproportionate impact require mitigation, and 2) must such mitigation be adopted?

Under NEPA, both the Council on Environmental Quality and the U.S. Environmental Protection Agency require a NEPA document to evaluate mitigation and alternatives that would avoid the environmental justice impact. However, neither CEQ nor EPA requires that such mitigation be adopted. The FHWA also requires that NEPA documents include mitigation and/or alternatives that would avoid the impact. However, the adopted policy allows FHWA to approve a project with environmental justice impacts so long as it finds that there are no feasible alternatives. This requirement to demonstrate that there are no feasible alternatives is similar to the “findings” requirement under CEQA.

Table 4. Checklist for CEQA Mitigation Considerations

Definitional Factors
Does the measure clearly do one or more of the following: • Avoid the impact? • Reduce the impact? • Rectify the impact? • Eliminate the impact over time? • Compensate for the impact?
Specificity Factors
Does the mitigation contain specifics about the following: • Why is that particular measure recommended? • What is specifically being proposed? • What are the success criteria? • What contingency measures will be required if initial success is not being achieved? • Where will the mitigation occur? • Who is responsible for implementation? • When will the mitigation occur?
Feasibility Factors
Economic Feasibility • Does the proponent have the money to implement the measure? • If the measure includes payment of fees, is the financing program active and effective? Will there be sufficient funds to ensure success? Legal Feasibility • Does the agency have the legal authority to require implementation? • Has a proper "nexus" been established between the impact and the mitigation measure? • Is the mitigation measure "roughly proportional" to the impact? (e.g., has "pro-rata" share been established?) Social Feasibility • Is the mitigation measure acceptable to affected parties (e.g., neighbors, the community) Political feasibility • Is the measure acceptable to the decision-makers • Are they likely to require it?
Timing
Will there be appreciable time gaps between project completion and mitigation implementation?
Monitoring
Can the measure be monitored for: • Implementation? • Success? Does the mitigation measure contain measurable performance standards?

Under CEQA, any consideration of environmental justice issues is optional and there is no requirement to mitigate for identified impacts. However, for many cities and counties, environmental justice is an important public policy consideration under general plan law, which requires them to consider disproportionate impacts when they prepare and adopt general plans for land use.

Examples of environmental justice impacts associated with transportation projects include the following:

- Project would physically displace existing park land or open space used for recreation by low-income or minority residents.
- Project effectively cuts off a low-income/minority neighborhood's access to an urban park.
- Project results in an increase in air pollutant emissions (e.g. diesel/toxics) near a recreational or open space area that is used by low-income/minority children (i.e., sensitive receptor populations).
- Project results in increased levels of air pollutants that adversely affect an inner-city school

In view of the importance of the issue, the Regional Open Space Program will likely need to include guidelines for the avoidance of environmental justice conflicts. These guidelines should be sensitive to impacts on open space that disproportionately affect low-income or minority residents and, at minimum, would set out strategies to involve such residents in the decision-making process. Development of such guidelines will be coordinated with SCAG's update of its environmental justice policies.

Consultation and coordination. Consultation and coordination are required and/or encouraged under CEQA, NEPA, and SAFETEA-LU. The planning process for the Regional Open Space Program can be used to identify the parties and establish a process for consultation and coordination on open space resource issues. This process also can be part of the action plan for the Regional Open Space Program and/or the overall RCP.

Outreach Program

The Phase A outreach program has centered on assisting SCAG staff convene the Open Space Working Group and identifying steps in the planning process where the involvement of SCAG members and stakeholders is crucial. Outreach efforts in Phase B will include:

- Working sessions with the Open Space Working Group and its sub-groups;
- Presentations to SCAG members, primarily via presentations as part of subregional association meetings, SCAG committee meetings, and Compass Blueprint/2% Strategy sessions.
- Three regional workshops on the preliminary draft Regional Open Space Program, in locations convenient for subregional representation (possible locations include Ventura County, Orange County, and Coachella Valley.
- Fact sheets and FAQs for public distribution and posting on the SCAG website.

Attachment A: Regional-scale Open Space Resource Plans and Programs

Program/Status	Area Covered	Key Features
California Desert Conservation Area Plan (Bureau of Land Management) Approved.	25 million acres in Southern California (from the southeast edge of Mono County to the border with Mexico; primarily Inyo, Kern, San Bernardino, Los Angeles, Riverside, San Diego, and Imperial counties)	• Regulatory based, with provisions for non-regulatory partnerships • Comprehensive, long-term management plan for public lands in the conservation area. • Includes subplans: West Mojave, Northern and Eastern Mojave, National Park Service, Coachella Valley, Western Colorado Desert, and Imperial San Dunes. • Overlapped by Lower Colorado River MSCP and Coachella Valley MSCHP
Central/Coastal Orange County Subarea Natural Community Conservation Plan Approved 10th year of implementation	208,000 acres in central Orange County, from the mouth of the Santa Ana River to the mouth of San Juan Creek. Covers unincorporated lands and the cities of Anaheim, Irvine, Laguna Beach, Orange, and San Juan Capistrano.	• ESA/CESA/NCCP based • Established a 37,378-acre reserve system • Reserve system includes park lands • Plan area extends to Riverside County border

Program/Status	Area Covered	Key Features
Coachella Valley Multiple Species Habitat Conservation Plan Pending final approval	1.2 million acres in the Coachella Valley watershed. Covers unincorporated lands and the cities of Cathedral City, Coachella, Indian Wells, Indio, La Quinta, Palm Desert, Palm Springs, and Rancho Mirage (Desert Hot Springs currently not part).	• ESA/CESA/NCCP based. • Identifies Cores and Linkages for conservation • Will add 190,540 acres of conserved land to 534,000 acres already protected (builds on public lands and existing reserves) • Reserve system includes park lands • Includes BMPs and guidelines for transportation projects • Coordinated with conservation plans for tribal lands • Part of Riverside County Integrated Plan • Plan area extends to San Bernardino, San Diego, and Imperial county borders.
Common Ground (Rivers and Mountains Conservancy and Santa Monica Mountains Conservancy) Active program	1513 square miles in Los Angeles County	• Partnership based • Watershed and Open Space Plan for the San Gabriel and Los Angeles Rivers watersheds • Sets guiding principles for open space planning • Discusses but does not propose specific projects • Includes strategies for education, partnerships, funding, planning, management, and monitoring/assessment • Identifies opportunities for land acquisition, connectivity and open space; public access; water resources'

Program/Status	Area Covered	Key Features
Green Visions Plan (University of Southern California. Rivers and Mountains Conservancy, Santa Monica Mountains Conservancy, Coastal Conservancy, and Baldwin Hills Conservancy) Active program	The Los Angeles Metropolitan Region (most of Los Angeles and Ventura counties, into northern Orange County)	• Partnership based • Vision statement, goals, and planning tools for integrated watershed, habitat, and recreational open space planning • Needs-based, long-range plan • Goals: protect and restore natural areas, restore natural hydrological function, promote equitable access to open space, and maximize support via multiple-use facilities • GIS tools used to identify needs and opportunities
Imperial County Irrigation District Natural Community Conservation Plan Early planning stages.	500,000 acres in vicinity of Salton Sea	• ESA/CESA/NCCP based • Related to implementation of the Lower Colorado River MSCP • Will address scrub, drain, Salton Sea, Desert, freshwater habitats and agricultural fields.
Lower Colorado River Multiple Species Conservation Plan Approved; early stages of implementation	400 miles of the Lower Colorado River and its floodplain from Lake Mead to Mexico. California plan participants include: City of Needles, Coachella Valley Water District, Colorado River Board, Imperial Irrigation District, Los Angeles Department of Water and Power, Palo Verde Irrigation District, San Diego County Water Authority, Southern California Edison, Southern California Power Authority, Bard Water District, and Metropolitan Water District of Southern California.	• ESA based • Will provide for protection, enhancement, and restoration of 8,100 acres of riparian, marsh, and backwater habitat • Will provide for stocking of 1.2 million juvenile razorback sucker and bonytail

Program/Status	Area Covered	Key Features
Los Angeles River Greenway (Santa Monica Mountains Conservancy. Mountains Recreation and Conservation Authority, and other partners) Active program	51-miles along the Los Angeles River, from the confluence of Bell and Calabasas Creeks in San Fernando Valley to the Pacific Ocean in Long Beach	• Partnership based • Goals: create a greenway composed of trails, parks, and natural lands; provide flood control; and provide new recreational opportunities for heavily urbanized communities along the river
Matilija Dam Ecosystem Restoration Project Active program	Upper watershed of the Ventura River to the Pacific Ocean	• Partnership based • Components include: restoration of southern steelhead habitat, removal of invasive giant reed, removal of a major southern steelhead migration barrier (Matilija Dam), restoration of natural hydrologic and sediment transport processes from the upper watershed to the Pacific Ocean, and restoration of habitat for 25 additional special status species. • Recreation measures include trails and associated facilities
Missing Linkages Project South Coast Wildlands and 15 Partners Active program	South Coast Ecoregion (area bounded by the Sierra Madre and Tehachapi Mountains on the north; Antelope Valley, Little San Bernardino Mountains, Coachella Valley, and Imperial valley to the east; Baja to the south; and Pacific ocean on the west).	• Partnership based • Outgrowth of Statewide Missing Linkages project • Focused on linkages at risk in the Ecoregion • Developed and applied GIS tools to delineate and prioritize linkages for conservation • Studies identify 11 priority linkages in SCAG region • Partners include conservancies and public agencies
San Bernardino Valley Water Conservation District Land Management and Habitat Conservation Plan Currently inactive.	5000 acres in the Upper Santa Ana River Wash	• Partnership based but also intended to address ESA issues • Focused on coordinating existing and future watershed management, mining, and related activities • Area includes recreational open space

Program/Status	Area Covered	Key Features
San Diego Region NCCPs Combination of approved/pending Active program	San Diego County	• ESA/CESA/NCCP based • North San Diego County MSCP o pending final approval o covers unincorporated lands adjacent to Riverside and Orange County borders • North San Diego MHCP o Framework plan approved; some subarea plans pending approval o Covers cities in northern San Diego County – Oceanside across to Escondido • East San Diego County MSCP o Early stages of planning o Covers unincorporated lands in eastern developed portions of county through desert. o Shares borders with Riverside and Imperial counties
Santa Ana Integrated Watershed Plan (Santa Ana Watershed Authority) Active program	2650 square miles in San Bernardino, Riverside, and Orange counties	• Watershed management based • Provides policy and coordination framework • Includes strategies for wetland preservation and enhancement, recreation, and conservation • Plan area extends from San Bernardino to Orange County coastline; encompasses Riverside and Orange conservation plan areas and other lands.

Program/Status	Area Covered	Key Features
Santa Ana River Trail and Greenway Project Active program Early stages	110-miles along the Santa Ana River from the mountains to the Pacific	• Partnership based • Partners include San Bernardino, Riverside, and Orange County Park Districts, 10 cities, Santa Ana Watershed Project Authority, Orange county Flood Control District, State Parks, Caltrans, USFWS, CDFG, US Army Corps of Engineers, The Wildlands Conservancy, Riverside Land Conservancy, and Trals-4-All. • Focused on connecting parks and trail systems along the river, with provisions for habitat and resource protection and enhancement
Santa Clara River Enhancement and Management Plan Framework plan completed	500-year floodplain limits of the Santa Clara River mainstem in Los Angeles and Ventura counties	• Partnership based • Partners include California Coastal Conservancy, Los Angeles County Department of Public Works, U.S. Environmental Protection Agency, USFWS, and Ventura County Watershed Protection District • Purpose is to provide guidance document for the preservation, enhancement, and sustainability of the physical, biological, and economic resources within the floodplain
Santa Clara River Parkway Project Active program	25-mile corridor from the mouth of the Santa Clara River to the Sespe Creek confluence	• Partnership based • Partners include Coastal Conservancy, The Nature Conservancy, Ventura County, and cities of Oxnard and Ventura • Entails acquisition and restoration of approximately 6000 acres in the corridors • Goals are to restore hydrologic and geomorphic processes that create and maintain habitat for listed species; provide enhanced flood protection; and facilitate public access and environmental education, including creation of a continuous public trail

Program/Status	Area Covered	Key Features
Southern California Forest Plan (U.S. Forest Service) Approved. Active program	3.5 million acres (Los Angeles, Cleveland, Los Padres, and San Bernardino National Forests)	• Regulatory based, with provisions for non-regulatory partnerships • Guides all natural resource management activities on the national forests • New emphasis on fire plan (community protection), managing for motorized access, and managing expansion and development of the forests to retain their natural character • Includes guidelines for recreation uses as well as natural resource protection
Southern California Wetland Restoration Project (California Coastal Conservancy) Active program 8th year of implementation.	Coastal wetlands and watersheds from Point Conception (Santa Barbara County) south to the border with Mexico.	• Partnership based • Regional strategy to increase pace and effectiveness of wetland recovery • Sets regional and county level goals • Funding and guidelines for local projects
Southern Orange County (Rancho Mission Viejo) Subarea Natural Community Conservation Plan Pending final approval	132,000 acres in southern Orange County. Covers unincorporated lands (primarily Rancho Mission Viejo).	• ESA/CESA/NCCP based • Also is a Master Streambed Alteration Agreement • Will establish a 32,818-acre reserve system • Reserve system includes park lands • Plan area extend to Riverside and San Diego County borders
Trust for Public Land Los Angeles Natural Lands Program Active program	Angeles National Forest (694,187 acres) and San Gabriel Foothills	• Partnership based • Acquisition program focused on 31-mile recreation/wildlife corridor across Puente-Chino Hills

Program/Status	Area Covered	Key Features
Trust for Public Land Orange County and Inland Empire Program Active program	Primarily Orange and Riverside counties	• Partnership based • Acquisition program to buffer, link, and expand existing open space/habitat/recreation areas • Key future projects include acquisitions along proposed Santa Ana River trail and along Pacific Crest national Scenic Trail
Trust for Public Land Parks for People -- Los Angeles Active program 5th year of implementation	Los Angeles County, with priority areas identified in South Los Angeles, Northeast San Fernando Valley, and Pico-Union neighborhood	• Partnership based • Goal: create 25 parks over a 5-year period in the region's most underserved areas. • GIS tools used to identify and prioritize needs
TWC Save the Saints Program (The Wildlife Conservancy) Active program	Santa Ana, San Gabriel, and San Bernardino Mountains (Los Angeles and San Bernardino national Forests)	• Partnership based • Acquisition program focused on private lands within the National Forests • Goals include improved public access and increased outdoor recreation opportunities
Western Riverside County Multiple Species Habitat Conservation Plan Approved; 3rd year of implementation	1.26 million acres in western Riverside County. Covers unincorporated lands and the cities of Banning, Beaumont, Calimesa, Canyon Lake, Corona, Hemet, Lake Elsinore, Moreno Valley, Murrieta, Norco, Perris, Riverside, San Jacinto, and Temecula.	• ESA/CESA/NCCP based. • Identifies Cores and Linkages for conservation • Will add 153,000 acres of conserved land to 347,000 acres already protected (builds on public lands and existing reserves) • Includes BMPs and guidelines for transportation projects • Part of Riverside County Integrated Plan • Plan area extends to Orange, San Bernardino, and San Diego county borders

Attachment B: Natural Resources Project Inventory for the SCAG Region by County*

^ For additional details regarding these projects and programs, go to http://ceres.ca.gov/planning/ and select “county”.

Project Title	Project Purpose
Imperial County	
A Survey of Algal Toxins in the Salton Sea	To determine if and when algal toxins are present in the water and benthic invertebrates in the Salton Sea, by testing samples received from others investigating the sources of these toxins.
Algal Toxins - Eared Grebes at the Salton Sea	Investigation of the cause of eared grebes mortality at the Salton Sea - algal blooms and biotoxins.
An Educational/Extension Program for Agricultural Pollution Control in the Salton Sea Watershed (0-8-094-257-0)	Pollution in agricultural drains in the Imperial Valley is a serious problem. Three main waterbodies in the area, the Alamo and New Rivers and the Salton Sea, are listed on the State's 303 (d) list of impaired waterbodies for various pollutants. The runoff from agricultural fields has been identified as the main source of these pollutants.
Avian Botulism at the Salton Sea	To conduct a study to determine the ecology and management of Avian Botulism at the Salton Sea.
Avifauna of the Salton Sea: Annual Phenology, Numbers, and Distribution	To conduct studies to document the population sizes, seasonal abundance, and habitat associations of key groups of birds in the Salton Sea area.
Brawley Wetlands Construction	Improve the Water Quality in the New River by treating agricultural discharge and New River Water in 2 wetland facilities.

Project Title	Project Purpose
California's Coastal NPS Control Implementation and Statewide NPS Program Coordination	The goals of this project are to: (1) enhance coordination of all partners involved in implementing actions identified in the Nonpoint Source (NPS) Program Plan; (2) support and promote collaboration amongst the Interagency Coordinating Committee (IACC); (3) support implementation of 61 identified management measures (MMs) by 2013, in part by co-leading and convening meetings for the IACC; (4) enhance CCC's local NPS outreach efforts by targeting resources on priority issues including local coastal program development and update; (5) support California's water quality agencies' efforts in implementing their storm water programs; (6) continue internal staff NPS oversight and training to ensure consistency in applying NPS measures; and (7) protect California's Critical Coastal Areas (CCAs) by developing site-specific action plans.
Carl Moyer Program For Imperial County AQMD [CMP-7]	Carl Moyer Program for Imperial County Air Pollution Control District
Cibola National Wildlife Area Project	To replace salt cedar with native vegetation.
Colorado River Basin Watershed Management Initiative	Water pollution and water quality issues in the Colorado River Basin region are prioritzed according to threat to public health and aquatic life; public interest; and recreational, economic, and aesthetic importance. Activities will be centered on development of pollution control limits (TMDLs) and the protection of drinking water sources. This strategy is being developed as a part of the State Water Board's Strategic Plan.
Desert Pupfish at the Salton Sea	To conduct a survey of the endangered desert pupfish community.
Dos Palmas Habitat Restoration / Enhancement	The purpose of the project is 3-fold: (1) provide refuge for endangered species, (2) provide public recreation & educational opportunities, and (3) manage the watershed on an ecosystem basis, provide for natural functioning of processes.
Drain Water Quality Improvement Plan - Imperial Irrigation District	To protect the beneficial uses of waterbodies receiving agricultural drainage flows and to improve the water quality of the New River, Alamo River and the Salton Sea.
Duck Club Evaporative Ponds	To determine the water quality benefits to be gained from proper management of evaporative ponds.

Project Title	Project Purpose
Eared Grebes at the Salton Sea	Identification and ecology of disease-causing agents for eared grebes.
Education/Extension Program for Agriculture (8-094-257-0)	The purpose of this project is to diminish the continued degredation of the Salton Sea by educating the local farming community about the severity of environmental pollution and why environmental degredation is bad for business. If the agricultural community and the public become aware of the association between environmental well-being and sound agricultural production practices, the resolution of the problems of the Salton Sea will be accelerated. The specific goal of this project will be to develop an education extension program directed at growers, irrigators, public agency officials, and the general public abut the environmental risks resulting from pollutants in surface runoff water.
Enhanced Evaporation Systems Project at the Salton Sea	To design and build the infrastructure for an Enhanced Evaporation System (EES) pilot project at the Salton Sea Navy Test Base.
Erosion Reduction in the Salton Sea Watershed (0-139-257-0)	Project addresses the need for improved irrigation management techniques in the Imperial Valley. Currently, excess irrigation water is the source of Nonpoint Source Pollution in the Imperial Valley. The two main rivers, the Alamo and New, drain agricultural runoff water to the Salton Sea. All three of these waterbodies are 303 (d) listed and slated for TMDL work in the near future.
Evans Park [C0209751_RZ-13-001]	Installation of ADA compliant playground (age 5-12) and new construction of ADA restrooms.
Fish Biology and Fisheries Ecology of the Salton Sea	The objective is to investigate the fish community composition, relative biomass, and fish population parameters (spawning, recruitment, growth and mortalities) and to examine the reproductive biology of all captured fish.
Hot Desert Direct Seeding Experiment	To compare a set of direct seeding methods, and determine the most effective methods for germination and the establishment of seeded species.
Imperial County Biological Control of Hydrilla Project (0074)	Biological control of hydrilla a noxious aquatic weed in California.
Imperial County Dudaim Melon Control	To control and eradicate dudaim melon from the county.

Project Title	Project Purpose
Imperial County Farm Bureau Watershed Program	The objective of this project was to communicate the requirements of the Total Maximum Daily Loads (TMDLs) and TMDL attainment strategies developed by the Regional Board to growers and landowners throughout the drainage areas of the Alamo River and Imperial Valley Agricultural Drains; to encourage and assist them to organize themselves into working groups corresponding to "drainsheds" (the physical analogy to watersheds in this artificial water environment); and to encourage and assist such drainshed groups to undertake a comprehensive evaluation and improvement of drainage management throughout their drainsheds to reduce off-site transport of silt.
Irrigation Management Reduces Tailwater: A Demonstration (0-082-257-0)	Pollution in agricultural drains in the Imperial Valley is a serious problem. Three main waterbodies in the area of the Alamo and New rivers and the Salton Sea, are listed on the State's 303 (d) list of impaired waterbodies for various pollutants. The runoff from agricultural fields has been identified as the main source of the pollutants.
Irrigator Training for Water Quality Enhancement	Irrigators require training so that on farm BMP's are achievable.
Jake James Municipal Sports Park [C0207102_02-13-002]	Provide and install event lighting for two soccer fields at the Jake James Municipal Sports Park in the city of Westmorland.
Joshua Tree Park [C0207101_02-13-001]	Installation of new playground equipment for ages 5-12, new construction of handicap acessible restrooms, new shaded picnic areas, a new cement walkway, and a new basketball court
Lewis Drain Treatment Facility	To reduce the selenium concentration in subsurface drainage water (tile water) and to explore reuse possibilities for agricultural surface water runoff.

Project Title	Project Purpose
Lower Colorado River Desert Region	1) Reduce salinity levels in the soil by installing subsurface tile drains and reduce soil compaction and soil stratification by slip plowing and growing cover crops. 2) Reduce the nitrate and pesticide levels in drain waters entering the Salton Sea with soil salinity management to reduce SAT and EC levels. This will improve sustainability of crop productivity and reduce sediment loading and salinity levels that are impairing surface water resources. 3) Reduce the amount of nitrates leached into the ground water through improved pest management, installed structures, irrigation water management, and education. 4) Reduce the amount of pesticides in runoff and drain water though improved pest management, installed structures, irrigation water management, and education activities. 5) Reduce PM-10 levels during the critical periods by implementing Reasonably Achieved Conservation Measures (RACM's) and Best Available Conservation Measures (BACM's) that have been approved by the Imperial-Coachella Air Pollution Control Districts.
New River Public Television Program (#02-153-257)	The New River is located in the southeastern portion of the Salton Sea Transboundary Watershed and is one of the main tributaries to the Salton Sea, California's largest inland surface water. The New River watershed is characterized by an arid environment and highly productive irrigated farmland. The New River transports partially treated and untreated wastewaters from Mexicali Valley across the International Boundary into the United States. It also receives disinfected and undisinfected domestic wastewater from sewage treatment plants in the Imperial Valley. Most of its flow, however, consists of agricultural return flows from the Imperial Valley. The New River is severely polluted by pathogens as indicated by high concentrations of fecal coliforms and Escherichia coli (E. coli) bacteria. These bacteria occur in the discharges from the Mexicali Valley in Mexico and in undisinfected water from the IMperial Valley wastewater treatment plants.
Northern and Eastern Colorado Desert Coordinated Ecosystem Management Plan	Recovery for Desert Tortoise, management of other plant & animal species of concern, greater sophisticated approaches to habitat management.
Nutrient Cycling in the Salton Sea	To improve our understanding of the role of the sediments in nutrient cycling within the Salton Sea.
Peach / Pampas Watershed Study	To quantify the improvement of water quality in agricultural drains when implementing sediment-load-reducing best management practices.
Picacho State Recreation	To reestablish native riparian vegetation.

Project Title	Project Purpose
Picacho State Recreation Area Feral Burro Removal	The purpose of this project is to remove feral burros.
Reconnaissance of Biological Limnology Assessment at the Salton Sea	A 12 month intensive reconnaissance of key biological components of the Salton Sea ecosystem.
Reconnaissance of the Physical-Chemical Limnology of the Salton Sea	To develop a sampling program to assess the current chemical and physical conditions in the sea.
Salton Sea Education Program (0-090-257-0)	This project fulfills a need for broadly distributed educational materials concerning the water quality problems of the Salton Sea Transboundary Watershed.
Salton Sea Management Project: Evaluation of Salinity and Elevation Management Alternatives	The general purpose of the management project is to stabilize the salinity and elevation of the Salton Sea at levels that maximize the economic, environmental, social, and cultural attributes of the region.
Salton Sea National Wildlife Refuge - Salt Cedar Removal (0218)	To restore the habitat to its native vegetation.
Salton Sea Restoration Planning	To develop long term restoration plans for the Salton Sea in conjunction with the Bureau of Reclamation.
Salton Sea Water Quality Modeling through the New and Alamo Rivers (7-047-250)	Changes in water level, salinity, and pollution have reached points where they threaten the region's ecological, economic, and recreational resources associated with the Salton Sea. The primary objective of this project is to provide a working set of mathematical simulation models that can be used to assess quantitatively the impacts of alternative management scenarios on the quality of waters in the New River and Alamo River from their headwaters to discharge locations in the Salton Sea.
Sediment Contaminants at the Salton Sea	The sediment contaminant study willl identify contaminant concentrations present in the bottom sediment of the Salton Sea.
Shoreline Clean Up at the Salton Sea	The objective of this program is to keep the most popular parts of the shoreline in the west shores community clear of dead fish and any other debris.

Project Title	Project Purpose
Solar Evaporation Pilot project at the Salton Sea	To design, build and operate a pilot evaporations ponds project to determine evaporation rate, precipitants, etc.
Survey of Selected Microbial Pathogens in the Salton Sea	To determine the presence and distribution of significant pathogens in the Salton Sea.
Tilapia Feeding Ecology / Avian Botulism at the Salton Sea	The role of tilapia feeding ecology in the epizootiology of avian botulism in the Salton Sea.
Whitewater River Revegetation Project	This project intends to reestablish native riparian vegetation.
Wildlife Disease Program at the Salton Sea	The primary purpose is to monitor the presence of wildlife disease at the Sonny Bono Salton Sea National Wildlife Refuge, to allow for early detection and rapid response to disease problems to minimize bird mortalities.
Yuha Desert Restoration	To rehabilitate illegal roads caused by OHV travel.
Los Angeles County	
6000 Jefferson Site Acquisition [BHC001]	Property acquisition appraisal and preliminary land valuation for future acquisition of 5.5 acres for public access and recreation opportunities.
A Watershed Management Plan for Restoration Feasibility of the Tujunga Wash (WSP03-0262)	The Project consists of developing a Watershed Management Plan (WMP), a stakeholder-driven comprehensive plan to restore ecological health and improve water management for beneficial uses in the Tujunga Wash Watershed. The WMP will focus on water resources, water quality, land use (including forestland and urban uses), hydrology, habitat, sediment sources, and recreation. When completed, the WMP will identify actions throughout the project area, guide agencies and stakeholders in implementation of the WMP, and recommend project implementation priorities. The WMP will be comprehensive in nature, use integrated problem solving, and incorporate adaptive management and feedback opportunities as monitoring and additional data becomes available. It will be integrated with the CALFED Watershed Program Principles and Desired Outcomes.

Project Title	Project Purpose
Altadena Chaney Trail Corridor [NP-0342]	This matching grant provided $25,575 to the Altadena Foothills Conservancy to acquire a 1.5-acre parcel in the foothills of the San Gabriel Mountains. The parcel contains a crucial link in the Chaney Trail, which ultimately connects Altadena with Mount Wilson.
Antelope Valley Poppy Reserve [6557]	Acceptance of a gift of property (5 acres) as an addition to the existing Reserve.
Arroyo Seco Watershed Management Plan and Education Program (WSP01-0149)	The purpose of this project is to research and develop a long-term implementation plan for the 47 square-mile watershed of the Arroyo Seco, a major tributary of the Los Angeles River.
Arroyo Seco Watershed Management Plan and Education Program (WSP01-0149)	The purpose of this project is to research and develop a long-term implementation plan for the 47 square-mile watershed of the Arroyo Seco, a major tributary of the Los Angeles River.
Arroyo Seco Watershed Restoration Program	Goal 1: Restore the natural hydrological functioning of the watershed Goal 2: Better Manage, Optimize, & Conserve Water Resources While Improving Water Quality Goal 3: Restore, Protect and Augment Habitat Quality, Quantity and Connectivity Goal 4: Improve Recreational Opportunities and Enhance Open Space
Assess and Reduce the Sources of Plastic and Trash in Urban and Coastal Waters	The primary goal of this project is to reduce the land-based inputs of plastic debris, which degrade water quality and impair beneficial uses of inland and coastal waters. The long-term foals include encouraging public policy makers, local governments, industry and the general public to reduce the soucres of plastics and trash discharges by developing pro-active source reduction strategies that go beyond trapping and catch basins and industrial housekeeping practices.
Azusa Canyon River Park Master Plan [RMC03206]	This project requests planning funds to create the Azusa Canyon River Park Master Plan which will provide the City with a blueprint for the entire 28-acre proposed park. Immediate implementation elements of the plan include the design and installation of interpretive signage on the development and initiation of an educational program at the site. The Plan will include data collection, infrastructure analysis, as builts for city owned structures, conceptual conversion plan for city owned structure, conceptual plan or park amenities, and summary report.
Baldwin Hills Appraisal And Engineering Feasibility Study [BHC002]	Contracting with the State Land Commission for economic evaluation of surface and subsurface real property interests and projected costs related to acquisition and finance of those interests within the Baldwin Hills Conservancy's territory. Prerequisite step toward acquisition of 650 acres of open space lands for the expansion of the KHSRA.

Project Title	Project Purpose
Baldwin Park - City Parks Master Plan [RMC03242]	The City of Baldwin Park's initiative to incorporate open space and passive recreation in their planning efforts and increase cooperation with their local school districts are actions that RMC encourages of all cities within the two watersheds.
Ballona Creek Watershed Management Plan	Set forth pollution control and habitat restoration actions to achieve ecological health.
Barranca Park Field Renovation [C0207150_02-19-007]	Installation of lighting, bleachers and irrigation at a Little League field at Barranca Park.
Bellflower Riverfront Park [RMC03238]	This project will prepare a plan for the development of a 15.5-acre regional, low impact recreation area adjacent to the San Gabriel River. Proposed improvements include a paved bikeway, landscaping, park benches, lighting, and informational signing. The project area is located within the Edison (11.4 acres) and Los Angeles County Flood Control District (3.9 acres) right-of-way between Somerset Boulevard and Alondra Boulevard. It sets forth a connection to the San Gabriel River bikeway via an existing pathway currently linking the regional bikeway to Alondra Boulevard.
Big Rock Creek	To return the site to native habitat following mining.
Briar Summit [SMM-902 #1]	Located in three watershed, these 52-acres provide critical a critical habitat stepping stone in maintaining the wildlife corridor by Griffith Park and the remainder of the Santa Monica Mountains.
Browns Canyon [SMM-6110]	Browns Canyon located in the central Santa Susana Mountains offers more wilderness elements than any other Los Angeles River tributary outside of the Angeles National Forest. The parkland includes a scenic, old gravel quarry that will soon make an ideal parking and staging area for access to open space in the numerous tributaries of the canyon. This property is the foundation for the 2,000-plus-acre Michael D. Antonovich Regional Park which was dedicated in late summer 2003. An oak lined road leads up the quarry and a network of trails lead in all directions but east. Teh property contains a spring-fed pond and surrounding mountains slopes support purple-sage dominated coastal sage scrub. The northern portion of the property provides sweeping vistas of the Santa Susana Mountains to the north and teh San Fernando Valley to the south.

Project Title	Project Purpose
Calabasas/Cold Creek [NP-0376]	This matching grant provided $200,000 to the Los Angeles County Department of Parks and Recreation to acquire a 120-acr parcel that is located in both the Topanga and Cold Creek watersheds. The Calabasas/Cold Creek Trail follows the ridgeline on the property. The rare Santa Susana tarplant is found on the property.
California's Coastal NPS Control Implementation and Statewide NPS Program Coordination	The goals of this project are to: (1) enhance coordination of all partners involved in implementing actions identified in the Nonpoint Source (NPS) Program Plan; (2) support and promote collaboration amongst the Interagency Coordinating Committee (IACC); (3) support implementation of 61 identified management measures (MMs) by 2013, in part by co-leading and convening meetings for the IACC; (4) enhance CCC's local NPS outreach efforts by targeting resources on priority issues including local coastal program development and update; (5) support California's water quality agencies' efforts in implementing their storm water programs; (6) continue internal staff NPS oversight and training to ensure consistency in applying NPS measures; and (7) protect California's Critical Coastal Areas (CCAs) by developing site-specific action plans.
Calleguas Creek Pollutant Load Investigation (7-120-250)	The purpose of the project is to collect the additional information needed to develop TMDL's and to use this information, together with the information to be collected under the characterization study, to estimate pollutant loads from point and nonpoint sources, develop preliminary TMDL's and load allocations, and evaluate potential control strategies. Based on the study, recommendations will be made for the logical next steps in the TMDL development process and a plan to implement the recommendations will be developed. Objective: To utilize BMP's targeting the chloride introduction from the interaction between surface water and groundwater in the implementation plan for the TMDL. This project will address CZARA management measures for agriculture sources of nonpoint pollution.
Caltrans: Arroyo Sequit	Mitigation for impacts of transportation projects.
Caltrans: Limekiln	Mitigation for impacts of transportation projects.
Caltrans: Little Rock Wash	Mitigation for impacts of transportation projects.

Project Title	Project Purpose
Caltrans: Malibu Lagoon	Mitigation for impacts of transportation projects.
Caltrans: North Fork Matilija	Mitigation for impacts of transportation projects.
Caltrans: Piru Creek (b)	MItigation for impacts of transportation projects.
Caltrans: San Gabriel River (a)	Mitigation for impacts of transportation projects.
Caltrans: San Gabriel River (b)	Mitigation for impacts of transportation projects.
Caltrans: Santa Clara River (b)	Mitigation for impacts of transportation projects.
Caltrans: Topanga Rock Slope Protection	Mitigation for impacts of transportation projects.
Caltrans: Valley Circle	Mitigation for impacts of transportation projects.
Capital Outlay Augmentation [SMM-6103]	This grant was used as a portion of capital improvements made to the septic system and other site improvements at Ramirez Canyon required by the California Commission.
Carl Moyer Program For Antelope Valley AQMD [CMP-1]	Carl Moyer Program for Antelope Valley Air Quality Management District
Carl Moyer Program For Antelope Valley AQMD [CMP-31]	Carl Moyer Program for Antelope Valley Air Quality Management District
Carl Moyer Program For Kern County APCD [CMP-9]	Carl Moyer Program for Kern County Air Pollution Control District

Project Title	Project Purpose
Carl Moyer Program For South Coast AQMD [CMP-22]	Carl Moyer Program for South Coast Air Quality Management District
Carl Moyer Program For South Coast AQMD [CMP-45]	Carl Moyer Program for South Coast Air Quality Management District
Castaic Reservoir Habitat Restoration & Improvement	Increase native plant species composition
Center For Community Forestry [NP-03163]	The Conter for Community Forestry at Coldwater CAnyon Park will showcase state of the art examples of sustainable green building and native plant landscape design while prviding a forum to teach teh residents of Los Angeles about living lightly on the earth and watershed management. The Conference Center will be available to host a variety of seminars and conferences with multi-media facilitation equipment. A nursery will propagate native plants and fruit trees for use throughout the Los Angeles basin in support of their citizen forestry program. The Parking Grove will not only serve as the entry to the Coldwater Canyon Park, but also be a demonstration of stormwater Best Management Practices, retain stormwater in a 250,000 gallon cistern under the parking lot, all while preserving heritage trees.
Cha Wot Nature Preserve [RMC03211]	Approximately 32-acres of hillside open space, presently owned by Signal Hill Petroleum, has been identified by the City of Signal Hill as a possible site for a nature preserve. The project protects threatened open space from development, expands existing public open space, provides enhanced access to a local trail system, and is a significant historic resource for the watershed.The feasibility study described in the proposal consisted of a geotechnical investigation, appraisal and preservation planning
Children'S Native Paint Garden [RMC03217]	Rancho Santa Ana Botanic Garden (RSABG) seeks a grant to complete planning for a acre Childrens Native Plant Garden for children ages 4 7, considered by education specialists to be a critical age for learning. The Childrens Garden will highlight regionally significant indigenous plant communities (riparian, chaparral, oak woodland, and meadow/grassland) and will incorporate interpretive exhibits on plant-animal interactions

Project Title	Project Purpose
City of La Mirada - Creek Park Restoratation [RMC03225]	The City of La Mirada submitted two applications and the County of Los Angeles Department of Public Works submitted one application for relatively similar projects either in scope or in geographic range. The two applications from the City of La Mirada deal with construction improvements to the three city parks along La Mirada Creek, while the Countys application is for preparation of a project concept report. RMC proposes that funding be used to prepare a joint master plan, or similar document, for the entire geographic reach of the three projects. The master plan could then be used to implement projects as funding becomes available.
City of Seal Beach San Gabriel River Bikeway And Staging Area Improvement [RMC03239]	RMC funding will help improve the San Gabriel River Trail as it makes its way to the beach, and allow for improved access and passive recreational activities.
Civic Center Linear Wetland / Trail project	Construction of a linear wetland / trail in the Civic Center area to improve water quality in Malibu Creek and to provide a pedestrian access-way.
Claremont Hills Wilderness Loop [RMC03202]	Acquisition of 240 acres (the Noland Property) in the Claremont foothills will expand the 1,200-acre Claremont Hills Wilderness Park (CHWP) and complete the Wilderness Park trail loop. The project goals include 1) trail signage and wildlife educational components, 2) protection of the rich biological resource values present in the Claremont foothills 3) unrestricted public access to the entire CHWP loop trail for both recreational and educational purposes, and 4) public education on the biological, historical and cultural significance of the area through interpretive signage. Upon acquisition, the 240 acres will be added to Claremont Hills Wilderness Park and managed subject to the CHWP Management Plan. The goal of the management plan is to manage the Claremont Hills Wilderness Park so as to preserve its natural characteristics while providing all visitors opportunities for passive and recreational enjoyment of the parks visual qualities, diverse vegetation, wildlife, and cultural resources.
Clean Marina and In-Water Hull Cleaner Certification Program (0-144-254-0)	The goals of this project are to: 1) raise awareness among the hull cleaners and marina operators regarding the effects that certain boating activities have on water quality; 2) promote the implementation of boat-related best management practices (BMP's) and less-toxic products; and 3) promote to the boating communtiy "green" businesses which use BMP's , reduce pollutant discharges and use environmentally friendly products. The Santa Monica Bay Restoration Foundation (SMBRF) will partner with several organizations to successfully coordinate and implement this pilot program.

Project Title	Project Purpose
Colorado Lagoon Restoration Feasibility Study [4759]	Grant to the City of Long Beach for preparation of a multi-objective feasibility study for Colorado Lagoon
Community Water-Use Efficiency Education and Training (WET) Project (WSP03-0092)	The purpose of the project is to increase the local community's learning and awareness across multiple issues, coordinate collaboration at the local and regional levels, and assist residents and businesses in the target communitiies in developing and articulating local solutions for local needs within the context of the local watershed.
Community-Based Watershed Pollution Prevention Partnership Program	The project generally consists of education and assistance to residents and businesses to incorporate Best Management Practices (BMPs) in their daily domestic and commercial activities to help improve water quality in the upper portion of the Compton Creek Watershed. The goal of the project is to build local capacity to effectively manage the watershed through the implementation of a watershed awareness, education and outreach program that will help residents, youth, and businesses to understand their role in improving water quality; and demonstration of BMPs that prevent and/or reduce nonpoint source pollution.
Compton Creek [RMC03246]	The goal of the Compton Creek project is to transform the concrete channel that divides the City into a functioning recreational area that enhances the watershed and provides a focal point for residents and the region to embrace with pride. In this process, the City wants to make sure the project is consistent with existing plans and guidelines governing the Los Angeles River, and that it reflects current landscape trends and delivers maximum connectivity to the region.
Compton Creek Watershed Management Plan	The goal of this project is to create a Watershed Management Plan specifically for Compton Creek that will address water quality and habitat issues, along with recreational use potential, through a stakeholder process.
Concrete Removal Along Las Virgenes Creek	Removal of 400 linear feet of concrete lining in Las Virgenes Creek between Agoura Road Bridge and the 101 Freeway. Restore ripairan habitatand install alternative lining where needed.
Control of Arundo donax in San Francisquito & soledad Canyons, Angeles National Forest (0520)	To restore riparian habitat that supports endangered fish (unarmored threespine stickleback).

Project Title	Project Purpose
Copper Emissions from Antifouling Paint on Recreational Vessels	The goal of this study was to assess the contributions of dissolved copper to receiving waters via antifouling coatings from recreational vessels. The objective was to measure these contributions in-situ to estimate flux rates under environmentally relevant conditions. The primary question addressed by this study is a comparison of dissolved copper flux rates for both passive leaching and hull cleaning activities. Three subquestions were also addressed in this study relevant to dissolved copper release rates from antifouling coatings. The first subquestion focused on quantifying the change in dissolved copper flux during passive leaching between cleaning events as biofilms, algae, and other encrusting organisms begin to grow on coated surfaces. The second subquestion focused on quantifying the effect of best management practices (BMPs) on hull cleaning activities. This is important since BMPs are a potentially important mechanism for controlling antifouling coating discharges. The third subquestion focused on evaluating the effect of different coating formulations. Differences among coating formulations may produce differential flux rates for copper during both passive leaching and underwater hull cleaning activities.
Cornfields Project, Immediate Public Use And General Planning [6029-0203-5]	This project will provide for the design and installation of immediate public use (IPU) facilities to launch a major urban unit of the State Park System at the Cornfields in Los Angeles. Funding will be used to make the park available to the public: installation of interpretive and educational features, parking, restrooms, landscaping for passive and active recreational use, and miscellaneous site improvements. The project also provides funding to support Department efforts to work with local constituents on long-range general planning for the park.
Coyote Creek And Carbon Creek Watershed Feasibility Study [4807]	Grant to Orange County for local match for U.S. Army Corps of Engineers watershed feasibility study for the Coyote Creek and Carbon Creek watersheds
Deferred Maintenance Projects [SMM-13129]	The Mountains Recreation and Conseration Authority operates many develpoed and open space parks that do not receive outside funding. These parks are not under service contracts from other governmental agencies, and are not eligible for Los Angeles County Proposition A funding. This grant will fund deferred maintenance projects which include roofing repairs, plumbing, electrical projects, minor road repairs, and various other costs in these parks

Project Title	Project Purpose
Deforest Park/Long Beach Park - Resource Bond [960315]	The CCC will provide labor for this project with Resource Bond allocations. The Departments partnership with the community and the California Conservation Corps is to perform the following improvements to the Nature Center. This sponsorship will benefit all parties by way of the following.1). The protection of plant and animal life and those habitats that promote bird nesting, small animal migration into the area and offer an educational element for the surounding community and schools.2). The methodology used to promote this beutification project and the publicity surrounding it has solicited community involvement. Members of the Audubon society and othercommunity leaders concerned with the aspects of the project have been consulted and are active participants.3). The Audobon Society has offered to help demonstrate to the California Conservation Corps members what to look for, what to protect and how to coexist with nature in an urban park environment that is being restored to its natural state.Project 04-4529
Del Mar Field Restroom [C0207202_02-19-012]	Construction of a permanent restroom at Del Mar Field
Detection, Control and Eradication of Caulerpa taxifolia	Although C. taxifolia is in the process of being eradicated in CA, the methods used in the present infestations were developed for protected areas having quiescent water. Since C. taxifolia is capable of establishing in high-energy coastal habitats, the objectives and goals of this project are:1. Develop better detection methodologies and approaches for coastal / near coastal areas; 2. Develop alternative containment and eradication methods for high-energy coastal/near coastal habitats 3. Develop a specific Rapid Response Implementation Plan for containment/eradications in high-energy habitats.
Dominguez Gap Wetlands Multiuse [RMC03232]	The Dominguez Gap Wetlands Multiuse project proposes to modify two existing retention basins located on each side of the Los Angeles River to create 12 acres of functional wetland and riparian habitat, improve water quality and recharge, create passive recreational facilities, including trails, shade structures, and interpretive signage, along with providing educational features, and improve aesthetic values. Furthermore, this project provides direct access to the 51-mile Los Angeles River Parkway.
Dominguez Watershed Management Master Plan	Protect and enhance water quality.Conserve, reuse, and recharge water supply.Protect, enhance, and restore native habitats and biological resources.Promote public awareness and involvement in watershed management. Implement stewardship of the watershed in balance with economic and environmental impacts.

Project Title	Project Purpose
E.G. Roberts Aquatic Center [C0207179_02-19-016]	Renovation of the pool including rehabilitation of the plumbing, electrical and lighting systems; re-finish surface of the pool and pool deck, re-roof and replace skylights in the pool building, and safety signage.
East Canyon Rex Holland [SMM-03126]	Adjoins existing East Canyon Park at 23801 The Old Road in Newhall. Option for acquisition protects viewshed, trailhead and provides excellent access into the Santa Clarita Woodlands Park just off the I-5 Freeway in the Newhall Pass.
East Fork Litter Abatement Project	The goals of this project include working toward the "zero-trash" TMDL goal in the East Fork of the San Gabriel River and to create an awareness within the community of this issue.
East Fork San Gabriel River Litter Abatement Project	The goals of the project are to take crucial steps toward reaching the "Zero-Trash" goal of the East Fork San Gabriel River Trash TMDL with the following objectives and steps: Installation of 40 new animal-proof dumpsters and 46 bilingual signs to meet the needs of growing forest visitor population; improve the knowledge of the public as to the nonpoint source trash pollution problem; give the public the tools and encouragement to take action cleaning the recreation areas by handing out free trash bags and gloves; create a connection between the forest service and the forest visitors with the work of CEP environmental restoration and education teams that will act as the liaison to both increase the public's understanding of Angeles National Forest rules and regulations and increase the forest service's understanding of public concerns, collect water samples that will increase the knowledge of pollution levels, sedimentation levels, stream flow, and trash content of the river in the designated recreation areas and the less impacted surrounding areas; and involve the community in volunteer clean-up projects to promote long-term project success.
Eastern Ridge [BHC004]	Planning and development for improvement of portion of the 315-acre Eastern Ridge line with group picnic areas, parking, child play areas, restroom facilities, viewpoints, native habitat restoration, interpretitive signage, and trail connections.
Economic Value For Watershed Management Techiques [RMC03212]	The study will develop a method to evaluate the monetary value derived from watershed improvement projects. The study will review watershed enhancements such as creating and expanding open spaces, improving flood protection, increasing groundwater recharge, providing passive recreational facilities, improving ground and surface water quality, preserving habitat and promoting multipurpose land use. Upon completion, a user-friendly spreadsheet model will be available to evaluate a projects total economic benefits in net present value annualized over the projects life span, resulting in a benefit/cost ratio for the project.

Project Title	Project Purpose
Education And Interpretation [SMM-03128]	Education and Interpretation programs, including outreach, volunteer recruitment, training, school programs, public events, and programs for children with special needs.
Education And Interpretation [SMM-6104]	Education and Interpretation programs, including outreach, volunteer recruitment, training, school programs, public events, and programs for children with special needs.
El Dorado Regional Park Wetlands Feasibility Study [RMC03208]	The City proposes to look at the potential of treating San Gabriel River water in a constructed wetland which may be located in the northwest corner of El Dorado Park. The treated water would then be used to replenish water in El Dorado Park lakes, and finally being released back into the San Gabriel River. Currently, the lakes are on a closed system with water circulating between the lakes.
El Pueblo To Elysian Park Heritage Parkway [NP-03107]	This grant provided funds to the Center for Law in the Public Interest and the Natural Resources Defense Council to conduct research and planning for a Heritage Parkway that would connect the El Pueblo de Los Angeles State Historic Park to the City of Los Angeles' Elysian Park and the new Cornfield State Park. The parkway would unite cultural, historical, recreational, and environmental resources key to the development of Los Angeles.
El Segundo Dune Management	To create a self-sustaining ecosystem.
Engaging the Community: Outreach and Education for the Sun Valley Watershed Retrofit Project (WSP01-0095)	The purpose of this project is for TreePeople to continue in its role as a facilitator of the stakeholder process, intensify the community outreach effort, and develop a public education program that would operate through schools, civic organizations, churches and businesses. Together, the stakeholder process and behavior - changing education can help the community attain the desired benefits of conservation and flood control.
Engaging the Community: Outreach and Education for the Sun Valley Watershed Retrofit Project (WSP01-0095)	The purpose of this project is for TreePeople to continue in its role as a facilitator of the stakeholder process, intensify the community outreach effort, and develop a public education program that would operate through schools, civic organizations, churches and businesses. Together, the stakeholder process and behavior - changing education can help the community attain the desired benefits of conservation and flood control.
Environmental Youth Center [03-5310-0503]	The LACC Environmental Youth Center is a site planned for youth science education, job-training and a nature center serving under-served communities and inner-city youth.

Project Title	Project Purpose
Eucalyptus Park Renovation [C0207162_02-19-006]	Renovation including new restroom, recreation building, picnic areas, jogging & exercise path, irrigation &, landscaping and lighting.
Evaluation of BMP Effectiveness	Little reliable information is available to evaluate the effectiveness of BMPs to reduce water quality impairments due to contaminants or other factors causing toxicity to aquatic life. The goal of this project is to assess the effectiveness of various types of BMPs to reduce the concentrations of toxics in urban runoff. The project was designed as collaboration with other agencies to enhance the monitoring of existing BMPs for both dry weather and storm runoff.
Filnt Wash Bridge Crossing Restoration [NP-0375]	This $375,000 matching grant will be used by the Ciy of Pasadena to construct a 150-foot bridge over Flint Wash to connect the Flint Canyon Trail and the old Oak Grove area within Hahamongna Watershed Park. Part of a trail system that connects the Angeles National Forest with the Arroyo Seco, the bridge is an essential link within the Rim of the Valley Trail Corridor.
Fish Passage at Cross Creek Road, Lower Malibu Creek.	Remove instream roadbed and replace with a bridge to allow baseflow and fish to pass under.

Project Title	Project Purpose
Forest Gateway Interpretive Center Park Bond [2505656]	He CCC will be assisting the City of Azusa in preparing their Forest Gateway Interpretive Center at the entrance to Azusa Canyon. This site is adjacent to the San Gabriel River and serves as the physical entrance to the Angeles National Forest. Over 7 million visitors pass through this highway on an annual basis. All visitors entering San Gabriel Canyon must stop at the Forest Service Entrance Station (proposed new Interpretive Center) to purchase an """"""Adventure Pass""""""" which allows visitors to park in the canyon. This project involves the construction of a 1,500 sq. Ft. Interpretive Center, funded by Azusa Light & Water, on a 5 acre parcel on the east side of Hwy 39. Surrounding the Interpretive Center will be a native plant garden, complete with native vegetation landscaping, meandering walking paths, and outdoor exhibits.The project will consist of habitat protection, restoration and bank enhancement of the historical California-American Water Company Canal, removal of non-native vegetation that impedes the water flow, hand excavation of existing riparian soils needed to create a detention basin and then stock piled for use in the rehabilitation planting areas and seed collection for re-development of the natural riparian habitat.This project is part of San Gabriel Watershed Management Plan and the Los Angeles County San Gabriel River Master Plan and involves multi-juristictions, such as the city of Azusa, Azusa Light & Water (Project Partner-Matching Funds), USDA Forest Service, MWD of So. Cal., North East Trees, San Gabriel Mountains Regional Conservancy(SGMRC), So.Cal.Edison, and LA County Reg. Park and Open Space Dist.This is a seed project with partner SGMRC who in turn will be partnering with the city of Azusa. The CCC will be providing a contribution of $25,000 in labor funded by the CCC Park Bond. (1,
Friends Of The Conservancy [NP-6109]	Seed funding for the Friends of the Conservancy to research various sources of funding for the purposes of supports efforts towards continued land acquisition, improvements, education and interpretation, and project planning.
Galster Park Project [RMC03229]	Galster Park is a wilderness park containing mostly undisturbed riparian and upland habitat with trails and camping facilities. The proposed facilities will provide a wilderness education experience for children in the San Gabriel Valley in a controlled setting. It is anticipated that extending the trails at Galster will eventually allow for trail connectivity with the nearby City of Walnut trails and trails from Los Angeles County (Skyline/Schabarum).

Project Title	Project Purpose
Gateway Cities Cog Bike Trail Expansion [RMC03252]	With funding from the RMC, the Gateway Cities Council of Governments (COG) would be able to extend the City of Bellflower work westward through the City of Paramount and eastward in the City of Artesia and, if desired, Cerritos. The COG would engage a consultant to review and update the feasibility study, including coordination with the plans and policies of the MTA, the Orange Line Development Authority and the affected cities as well as the RMC.
Glendale/Le Mesnager Improvements [NP-0346]	This matching grant provided $200,000 to the City of Glendale to implement construction drawing for improvements at the Le Mesnager historic site in the Deukmejian Wilderness Park. The improvements are for the purposes of seismic stabilization and rehabilitation of structures on the site, and for the creation of interpretive displays. Through these improvements, the Le Mesnager barn will become an interpretive center.
Gordon Mull Property [RMC03223]	The Gordon Mull Property, 29 acres of hillside open space property in the San Gabriel Mountain foothills north of Glendora, contains two blue-line streams and connected wetlands, sensitive plant communities including coastal sage scrub and walnut woodland and 8 identified sensitive plant and animal species.The project will increase the linkage to the Foothills Wildlife Corridor and create interpretative nature trails linked to the existing foothill trail system. The property consists of a north/south trending ridge and slopes to the canyon bottoms of two flanking canyons on the east and west: Mull Canyon and Gordon Canyon.
Grassland Restoration - Nicholas Flat [TBA404-00]	Restore grasslands in park
Griffith Observatory [C0204011_CH-19-001]	Renovation and expansion of the Griffith Observatory to include, but not limited to, the domes and cupola, roof, exterior walls, steps, railings, interior walls, floors, ceilings, electrical, plumbing, and addition of exhibit space, auditorium, food servi
Groundwater Tracer Study (5-159-250)	The purpose of this report is to improve groundwater management by finding reliable tracers to be ultilized in hydrologic studies.
Habitat Auth. Community Outreach & Ed. Programs [RMC03233]	The Puente Hills Landfill Native Habitat Preservation Authority (Habitat Authority) is a government joint powers agency set up to acquire, restore and maintain open space in the western Puente Hills as permanent protection for the native habitat. Habitat Authority Community Outreach & Education Programs Development proposes the creation of training manuals and materials for docents (nature guides), junior ranges, volunteer corps and a speaker's bureau for the open space, watershed lands owned or managed by the Puente Hills Landfill Native Habitat Preservation Authority.

Project Title	Project Purpose
Hall-Beckley Canyon-La Canada Flintridge [SMM-0237]	This matching grant provided $600,000 to the City of La Canada Flintridge for acquisition of the approximately 6/acre Hall Beckley property adjacent to the Angeles National Forest. The property provides a high quality and beautiful access point for two trails in the National Forest.
Headwaters Corner [NP-0347]	This matching grant provided $250,000 to the Mountains Restoration Trust to acquire a parcel totaling approximately 2.2. Acres located along Dry Canyon Creek, a perennial headwaters of the Los Angeles River. The parcel is within Headwaters Corner, which will eventually be used as a Regional Environmental Interpretive Center. The parcel provdes a critical link of the Henry Ridge Trail.
Headwaters to Groundwater: Upper Los Angeles River Area Assessment Project (WSP03-0532)	1.The Project consists of a water quality and habitat assessment of the headwaters of the Los Angeles River. The project will determine those areas that contribute to the protection and potential enhancement of the native water recharge to the San Fernando Valley Groundwater Basin. The focus of the project will be to determine means to reduce demand on the Bay-Delta system by identifying cost-effective opportunities to infiltrate native water into the groundwater basin thereby reducing the need to import water from the Bay-Delta to sustain safe yields.
Heidelberg Park [SMM-6106]	Located in the Mount Washington community near downtown Los Angeles, 18-acre Heidelberg Park provides a rare glimpse of the natural appearance of Mount Washington prior to European settlement of the Los Angeles basin. The park's steep slopes have harbored one of the best remaining examples of California black walnut woodland in all of Southern California. The walnut woodland here provides food and excellent cover for wildlife, and critical roosting and nesting sites for numerous songbirds and birds of prey. Purchased in November 2002, Heidelberg Park is the second largest natural park permanently protected by the Conservancy in the Mount Washington area, known for its twisting streets, city views and rural character. The Conservancy purchased nearby Elyria Canyon Park in 1994, with the energetic support of the Washington community.
Hemingway Park Pool Project [C0207145_02-19-001]	Construction of a recreational pool.
Hemingway Park Pool Project [C0209741_RZ-19-064]	Development of a pool.

Project Title	Project Purpose
Hermosa Beach Fishing Pier Improvements [2003029]	A cooperative project with the City of Hermosa Breach to improve public access to the Hermosa Beach Fishing Pier, located at the end of Pier Avenue in the City of Hermosa Beach on Californias southern coast. The project will provide a new ADA compliant restroom next to the pier and renovate the old concrete entranceway to the pier.
High Desert Stormwater Phase II Awareness Impact Project	The purpose of the project was to develop an education and outreach program to encourage citizens to implement practices that reduce the impacts of stormwater runoff on water quality in the High Desert.
Historical Reyes Adobe Restoration [C0209011_RZ-19-063]	Restoration of the historic Reyes Adobe site.
Hoag Canyon [SMM-6111]	(PAUL)
Hollywood Small Generators Hazardous Waste Pilot Study (3-105-225)	The North Hollywood Pilot Project for Small-Quantity Generators of Hazardous Waste is one of the first of its kind in the nation. Its objective is to develop a management plan which will help to prevent future ground water contamination by providing businesses that generate small quantities of hazardous waste with an economical, convenient method of disposing of their wastes. The recommended plan thereby removes many of the incentives for improper disposal of hazardous wastes.
Improvements To Pio Pico State Historic Park [RMC03235]	The purpose of this project is to create educational materials that will inform visitors of the existing California native gardens at Pio Pico State Historic Park. State Parks is currently transplanting non-native vegetation and replacing it with native plant species in preparation for the re-opening of Pio Pico State Historic Park following three years of renovations.
Infiltration of Urban Runoff Demonstration Program	The goal of the project is to provide information about the transport and fate of surface water contaminants into the sub-soil and groundwater, in order to evaluate the potential impacts of infiltrating urban runoff under actual field conditions. This project is part of a larger research study, the LA Basin Water Augmentation Study, whose long-term goal is to evaluate the potential of stormwater infiltration for reducing surface pollution and recharging groundwater supplies.

Project Title	Project Purpose
Inner Cabrillo Beach Water Quality Improvement Project	Inner Cabrillo Beach has been cited as being one of the most polluted beaches in Southern California and is visited by an estimated 600,000 visitors per year who are exposed to viruses, bacteria and protozoan that can cause disease and pose a very real health threat. It is the Port of Los Angeles' intent to improve the water and sand quality, and to analyze all possible sources of bacteria so that a long-term solution can be put into pace to minimize or eliminate the source of contamination.
Keiser Park Renovation Windsor Resources Bond [2414710]	CCC will assist in constructing a garden for the Santa Fe Dam Nature Center's Grand Opening. There will be some sidewalk removal to be replaced with decomposed granite, trenching for and installation of irrigation, planting of native plants and some small tree removal and site improvement. The Nature Center harbors the natural beauty of the San Gabriel Valley's native habitat that has been preserved there for thousands of years. This project will provide corpsmembers with education on landscape design by Jeff Hutchins, a licensed Landscape Architect that will be on-site. Also on-site teaching corpsmembers about plant and wildlife identification is Ramona Rubio, who has a PhD in Cultural Anthropology.This project is a seed project with CCC partner (SGMRC) San Gabriel Mountains Regional Conservancy, who is in the process of tying the CCC into a $700k grant for future conservancy projects. CCC will provide 2,095 hours of labor with the funding of CCC Park Bond for $35,000.This project is part of SGMRC's mission to promote the preservaton of land and\or buildings for historic, educational, ecological, recreational, scenic, or open space opportunities.
Kenneth Hahn SRA, Vista Pacifica Visitor Center [6029-0304-2.5]	This project will construct a new visitor center and associated facilities on the recently acquired Vista Pacifica property at Kenneth Hahn SRA. The project includes a visitor center facility of approximately 12,000 square feet that will house interpretive and exhibit space, the shell of a food service facility, and appropriate office space. The project also includes appropriate site access, associated parking, utility infrastructure, interpretive exhibits, roadway improvements, trails, viewing areas, and a small picnic area.
LA Co Nat Museum Restoration [C0204012_CH-19-003]	Refurbishment and restoration of the original facility of the Natural History Museum.
La Tuna Canyon Hillview [SMM-03159]	Grant to acquire northern Verdugo Mountains wildlife habitat linkage property adjacent to the 210 Freeway.

Project Title	Project Purpose
Lacc-Mulholland Scenic Parkway [SMM-03105]	The Mulholland Scenic Parkway winds along the spine of theSanta Monica Mountains, and is considered a treasured resource for Los Angeles and a popular destination for tourists. Day to day maintenance of teh scenic overlooks along the Mulholland Scenic Parkway is performed by the Department of Parks and Recreation. The MRCA rangers have augmented teh basic maintenance provided by the City, and periodically have conducted community supported clean up projects along the Scenic Parkway. MRCA in collaboration with the Los Angeles Conservation Corps (LACC) will regularly remove and maintain the entire scenic parkway.
Lakeview Park Multipurpose Facility [C0207204_02-19-009]	A development project to replace an outdated recreation facility with a new, ADA compliant structure.
Las Palmas Park Ball Field Rehabilitation [C0209915_RZ-19-067]	Rehabilitation of three existing ball fields including the realignment of sprinklers, removal of trees, installation of drainages system, realignment of ball field and installation of Scoreboard.
Las Palmas Park Playground Refurbishment [C0207200_02-19-013]	Demolition of existing playground site, reconfiguration of site, preparation and installation of new playground equipment, picnic tables, benches. Installation of recycled California waste tire surface throughout the playground area.
Las Virgenes Creek Streambank Rehabilitation	This project will rehabilitate a streamband that is severely eroding due to poor construction practices in the past where uncompacted fill was deposited next to the creek. Through the use of bioengineering technique and native revegetation, it will serve as a demonstration to the community on how to better manage development and creek systems while enhancing native habitat.
Las Virgenes Road Pipeline Project	To reestablish native grass and oaks in a weedy meadow that had once been an oak savanna.
Las Virgenes, McCoy, and Dry Canyon Creeks Master Plan for Restoration	The objective of this creek master plan is to perform a thorough and in-depth baseline study and management plan of these creeks from which to make restoration and water quality decisions.
Leo Carillo SP, Picnic Area Upgrades [6029-0304-AD12]	This project makes ADA improvements to picnic sites and parking.
Liberty Canyon Natural Preserve/ Savannna Restoration	To establish a native grass understory surrounding selected Valley Oak trees at the southern most limit of their distribution.

Project Title	Project Purpose
Linden H. Chandler Preserve Arundo Eradication (0256)	Riparian restoration.
Los Angeles and San Gabriel Rivers Watershed Council Organizational Development (WSP01-0144)	The purpose of this project is to fund a full-time experienced person, along with material and administrative support, for a 3 year period. This will cover the WMP development tasks to which we are committed and allow us time to secure regular on-going funding for this staff position.
Los Angeles and San Gabriel Rivers Watershed Council Organizational Development (WSP01-0144)	The purpose of this project is to fund a full-time experienced person, along with material and administrative support, for a 3 year period. This will cover the WMP development tasks to which we are committed and allow us time to secure regular on-going funding for this staff position.
Los Angeles County Aligatorweed Project (0354)	To control and eradicate alligatorweed from county.
Los Angeles County Alligatorweed Biological Control Project (0069)	Biological control of alligatorweed, a noxious aquatic weed, in Los Angeles County.
Los Angeles County Halogeton Eradication Project (0355)	Eradication of halogeton in Los Angeles County
Los Angeles County Klamathweed Biological Control Project (0106)	Biological control of klamathweed a noxious weed of rangelands and right-of ways in Los Angeles County.
Los Angeles County Puncturevine Biological Control Project (0164)	Biological control of puncturevine, a noxious weed of rangelands and right-of-ways, in Los Angeles County.
Los Angeles County Water Hyacinth Biological Control Project (0201)	Biological control of water hyacinth a noxious aquatic weed in California.
Los Angeles County Yellow Starthistle Biological Control Project (0017)	Biological control of yellow starthistle a noxious weed of rangelands and right-of ways in Los Angeles County.
Los Angeles County-Wide Structural BMP Prioritization Methodology	The goal of this project was to develop a tool that stakeholders throughout Los Angeles County can use to prioritize structural BMP placement in a systematic, flexible and transparent manner.

Project Title	Project Purpose
Los Angeles Japantown [C0204033_CH-19-005]	Japantown
Los Angeles River Master Plan	The purpose is to coordinate planning, financing, and implementation of the Master Plan for Los Angeles River and Tujunga Watershed.
Los Angeles River Parkway-Taylor Yards, Immediate Public Use And General Planning [6029-0203-4]	This project will provide immediate public use facilities to launch a major urban unit of the State Park System at Taylor Yards in Los Angeles. Funding will be used to make the park available to the public by providing access, sanitation, open-space for active recreation, and traffic improvements. The project also provides funding to support Department long-range general planning efforts for the park.
Los Angeles Urban Runoff Education (2-072-254-0)	This project will determine the level of awareness of the storm drain system among adults age 18 and over, residing in Los Angeles County to define target audiences for public education, determine attitudes about environmental pollution, and determine effectiveness of previous storm water pollution public education campaigns.
Los Angeles Volunteer Monitoring and Education (00-123-254-0)	To encourage and increase public involvement and to maximize data quality from citizens in volunteer monitoring programs. SCMI provided training, guidance, field consultations, and quality assurance sessions open to all of the region's volunteer monitoring organizations.To provide an illustrated field guide for sampling and analysis performed by volunteer monitors. This field guide was patterned after the proven model provided by the Heal the Bay Stream Team Field Guide. In addition to its obvious value to volunteer monitors, this Field Guide will be an educational resource made available to participating schoolteachers.To expand and coordinate seasonal water monitoring "snapshot" efforts. The existing volunteer monitoring effort within Region 4 was restructured and expanded in order to assess and report water quality on the same day in all the region's watersheds, which include: Los Angeles River watershed, San Gabriel River watershed, Dominguez Channel watershed, and Santa Monica Bay Watershed Management Area (WMA).To assist groups in data entry and transmittal, thereby assisting the Regional Board staff in their water quality assessment and TMDL efforts. All credible data collected by participating volunteer groups and the lead agency, in all of the local watersheds, was entered on a computer database and transmitted to the Regional Board via email monthly.To increase public awareness and stewardship of our water resources, thereby changing wasteful practices resulting in lower pollution levels over time.Recommendations for revisions to the Southern California Volunteer Monitoring Quality Assurance Project Plan (QAPP).

Project Title	Project Purpose
Los Cerritos Wetlands Acquisition [4597]	The goal of the Los Cerritos Wetlands Acquisition project is to assemble properties in order to enable restoration of intertidal wetlands and related habitat.
Lower Malibu Creek Management Plan (6-047-250)	The purpose of this study was to assess the potential for transport of septic effluent, microorganisms, and nutrients from on-site septic systems to the lagoon.
Lower Zuma Creek and Lagoon Wetland Restoration (7-098-254-0)	To preserve and restore the dune, wetlands and riparian habitats at the Zuma Beach County Park.
Lynwood Meadows [RMC03226]	Lynwood Meadows is a proposal to rehabilitate a vacant city-owned property as a park. The project is located in a densely populated community. The majority of the park is proposed to be open space, except for a few picnic areas, gazebos, a sand box and a cardio park. Partnerships will be forged with local environmental groups for planning and implementation of the reintroduction of native vegetation.
Machado Lake Assessment (01-046-250)	The project goals were to a Machado Lake Watershed Management Plan to address pollution due to urban and stormwater runoff and degradation due to human misuse. The scope of work included conducting dry and wet weather sampling, identifying targeted pollutants, specifying structrual best management practices for mitigation, conducting a preliminary engineering design of the BMPs, and preparing an evaluation framework for other urban lakes in the City of Los Angeles.
Malibu Creek (DWR #Z60151)	The purpose of this project is to protect streambanks from erosion and reduce flood-producing sedimentation downstream along the upper Malibu Creek Watershed.
Malibu Creek SP, Removal Of Corral Canyon Residences [6029-0304-8-7]	This project will demolish, remove, and dispose of two existing residences and associated items in the Corral Canyon area of Malibu Creek State Park. After removal of the residences and the other items associated with the dwellings, the impacted areas will be restored to a pre-development native condition. Included in demolition and removal are all dwelling structures and appurtenances, concrete flatwork, roads, cisterns, water storage tanks, any existing piping, water tanks, and non-native trees and plants. The site will then be re-graded to its approximate previous condition and re-planted with native vegetation.
Malibu Creek SP, Sepulveda Adobe Repairs [6029-0203-DM17]	This project completes repairs to the Sepulveda Adobe at Malibu Creek SP.

Project Title	Project Purpose
Malibu Creek Watershed Natural Resources Plan	Development and implementation of innovative and integrated management planning strategies and practices that will maintatin an enhanced quality of water in Malibu Creek along with quality of the watershed.
Malibu Creek Watershed Protection and Education Project (7-033-254-0)	Monitoring three of Calabasas's creeks for nutrients, metals, coliform, pH, hardness, dissolved oxygen and other indicators. Purchase environmental reosurces and locate them in city Hall and City Library. Includes childrens environmental theater.
Malibu Creek Watershed Protection Project (4-090-254-0)	The purpose is to reduce pollution sources through implementing manure management. Will develop strategies and thorough stabilization and regulation of disturbed stream banks.
Malibu Lagoon Restoration [4589]	A grant up to $250,000 to Heal the Bay, working with the California Department of Parks and Recreation to study the feasibility and design of restoring wetlands in Malibu Lagoon State Park damaged by historical dumping and filling.
Malibu Lagoon State Beach	To re-establish coastal wetland habitat that had been filled in with soil.
Malibu Stormdrain Treatment Facility	Installation of a Stormwater Disinfection Facility to treat dry-weather and first flush runoff from three major storm drains in the Civic Center area which outlet into Malibu Creek.
Marquez Low Flow Diversion [CBI #110]	Dry weather diversion to sanitary sewer in Westchester Parkway near Dockweiler State Beach.
Marsh Street Skate Park Landscaping Project [NP-0377]	This grant will provide $35,000 for concept design, public process, and construction doucments for landscaping an area around a skate park being developed in partnership with the City of Los Angeles. This project will provide shade in the community and a link to the Los Angeles River Bike path in the Elysian Valley.
Memorial Park Baseball Infield Turf & Irrigation [C0209911_RZ-19-069]	renovation of Memorial Park baseball field consisting of installation of irrigation and drainage system as well as a turn infield playing surface

Project Title	Project Purpose
Minor Capital Outlay [SMM-03130]	The Mountains Recreation and Conservation Authority operates and manages multiple park sites and open space areas for the Santa Monica Mountains Conservancy. In order to provide high quality park experience for park visitors, minor site fixture upgrades are often necessary. These include signage, park benches, picnic tables, interpretive displays and other park amenities. Often, the funding sources available for the ongoing maintenance of parks are not sufficient to include the replacement or purchase of such items.
Minor Capital Outlay [DEPTID46329] [SMM-6102]	The Mountains Recreation and Conservation Authority operates and manages multiple park sites and open space areas for the Santa Monica Mountains Conservancy. In order to provide high quality park experience for park visitors, minor site fixture upgrades are often necessary. These include signage, park benches, picnic tables, interpretive displays and other park amenities. Often, the funding sources available for the ongoing maintenance of parks are not sufficient to include the replacement or purchase of such items.
Monrovia Hillside Wilderness Perserve [RMC03204]	The Wrigley Heights acquisition project is a 20-acre site adjacent to the east bank of the Los Angeles River, immediately south of the 405 Freeway and north of Wardlow Road. The majority of the site was formerly used as an oil and water separation facility for a consortium of oil companies and is currently considered a Brownfield site. The project application specifies that the landowner will clean up the contamination as part of the sale price. Once acquired, it is proposed that the site be restored as freshwater wetlands surrounded by high and low riparian woodlands and other publicly accessible open space uses. The strengths of this project were in the urban, recreational, and open space factors as well as educational and cultural considerations. There is also significant potential to restore natural habitat on the site. The Coastal Conservancy has identified the project area as a potential wetlands restoration site as part of the Southern California Wetlands Recovery Project. It is also currently listed as a potential project site in the Los Angeles River Master Plan. Further, this project is a key link to the 51-mile Los Angeles River Parkway.
Monrovia Wilderness Preserve [2002059]	The allocation of a grant to the City of Monrovia to assist the City in its acquisition of 429 acres of land lying within the city limits of Monrovia, for the preservation of wildlife corridors and habitat for threatened and endangered species.
Montvue Park [C0207193_02-19-010]	Replacement of scoreboard at Little League park

Project Title	Project Purpose
Mulholland Scenic Overlook Rehabilitation [SMM-6101]	Thsi grants was awarded to the MRCA for the purpose of rehabilitation Mulholland Scenic Overlooks and trailheads in the Santa Monica Mountains Zone. These overlooks are heavily used, and the native landscaping in and around high use areas tend to deteriorate as a result. Work performed included irrigation upgrades, replacement of plants, installation of mulch, reparir of fencing, and graffiti removal and coating. Work was performed at Marvin Braude, Mulholland Gateway Park, Getty View Trailhead, the Stone Canyon, Summit, Nancy Hoover Pohl at Fryman canyon, and Universal City Overlook, and other overlooks along Mulholland Drive.
Multi-Tiered Approach Using Quantitative Polymerase Chain Reaction For Tracking Sources of Fecal Pollution to Santa Monica Bay, California	This objective of this study was to identify the contributions and quantify the loading of fecal contamination to the SMB using a multi-tiered approach. The first tier included traditional fecal indicator bacteria measurements. The second tier included newly developed methods for enterococcus, Bacteroides sp., and enterovirus. All of these newly developed methods rely on QPCR or QRTPCR, which has not been applied previously for source tracking studies in urban watersheds until now. The multi-tiered approach was applied using a mass-based design to quantify inputs and flux through an urban watershed to the beach. A subsidiary objective included using the multi-tiered approach through a relatively undeveloped watershed. Finally, the multi-tiered approach was used to determine the effectiveness of a variety of structural best management practices (BMPs) that were aimed at reducing bacterial inputs from urban watersheds.
Museum Of Latin American Art [C0204014_CH-19-004]	The site expansion will include an exterior/faade, a garden/outdoor performance space, additional exhibition and educational space, administrative offices, and a research library. The dynamic. Expanded museum complex will be interactive and secure MoLAA'
Native Plant And Wildlife Garden [BHC005]	Creation of a sustainable 3-acre native plant and wildlife garden including a habitat walk that demonstrates healthy ecosystems. Project will educate park visitors on importance of native econsystems in the coastal zone.
New Schools Better Neighborhoods Joint Use Park Development Project [NP-03199]	New Schools/Better Neighborhoods (NSBN) is a civic advocacy organization formed to promote a 21st Century vision for California's urban school districts: new schools should be centers of neighborhoods and likewise, neighborhoods adn communities should serve as centers of learnining. NSBN will promote the concept of designing smaller school facilities that can build upon and accommodate existing community land and facilities to save on time, money, land, and other resources. NSBN's goal is to create small, neighborhood-centered schools that function as community centers and also reduce sprawl development and suburban migration by more efficient and imaginative use of limited urban land.

Project Title	Project Purpose
Nitrates in Ground Water in the Agua Dulce Area (0-191-254)	The purpose of this project was to determine how variably the ground waters in the Sierra Pelona basin are influenced by nitrate. A rather large percentage of wells tested exceed or are approaching the MCL (maximun contaminant level) of nitrate.
Nutrient Reduction in Streams - Ecological Equine Management	Corralled animals, primarily horses are adding high amounts of nutrients from manure to the stream systems. This project will develop and implement Best Management Practices for managing horses in this watershed and showcase these through public education, management manuals and demonstration sites.
Oakshire-SMMCF (1) [SMM-6107 #1]	(PAUL)This grant secured control of a spring laden canyon in the eastern Santa Monica Mountains. MRCA subsequently acquired the property in full.
Oakshire-SMMCF (2) [SMM-6107]	This grant secured control of a spring laden canyon in the eastern Santa Monica Mountains. MRCA subsequently acquired the property in full.
Peck Water Conservation Park [RMC03214]	The proposed project is a planning study of low-impact recreational, educational, San Gabriel River watershed and wildlife/habitat improvements at Peck Water Conservation Park and the Rio Hondo extending from Peck Park to the area near Whittier Narrows. The plan will identify and plan opportunities for bicycle, equestrian and walking/running trail improvements and access/connectivity to existing trails in and adjacent to the project area. It will also identify and plan opportunities for interpretive signage to promote park history as a reclaimed gravel quarry, and how it functions in the flood management plan for the watershed.
People For Parks Charitable Fund-Montecito Heights Study [NP-02146]	People For Parks conducted a feasiblity study to develop an action plan for the prioritizing of sensitive lands for acquisition in the Montecito Heights area of Los Angeles. These lands contain undisturbed plant habitat and contributes to the connectivity of other wildlife areas in the region.
Philadelphia Park [C0207193_02-19-011]	Installation of a shade shelter for patio area at Philadelphia Park Mini Community Center, with related sitework.
Pioneer Park Playground Refurbishment [C0207200_02-19-014]	Remove existing sand playground surfacing and partial rubberized surfacing and worn play features. Install new play features and recycled California waste tire rubberized surfacing throughout entire playground area.
Planning And Interpretive Services Grant [BHC003]	Grant to assist with planning, research, formation and execution of development studies for the Baldwin Hills and Ballona Creek.

Project Title	Project Purpose
Planting And Irrigation Of Field At Barnes Park [C0207137_02-19-003]	All of the aspects involved with planting and irrigation of the field at Barnes Park
Point Dume Boardwalk and Habitat Restoration	Habitat restoration.
Point Dume Iceplant Eradication	Eradication of Iceplant which is displacing two native plant communities.
Project Planning And Design [PPD (a)]	General Project Planning and Design includes most expenses related to the development of acquisition and park improvement projects.
Project Planning And Design [PPD]	General Project Planning and Design includes most expenses related to the development of acquisition and park improvement projects. This grant was used to fund most of the MRCA's implementation of FY 02/03 Proposition 40-funded projects and some planning and design expenses for projects to be completed in FY 03/04.
Puente Creek Nature Education Center [RMC03224]	The City of La Puente proposes acquisition a vacant parcel along Puente Creek on which the Nature Center would be located. Situated between an existing school and the channelized creek, the sheltered education center will provide the local community as well as the students of the surrounding school districts the opportunity to gain knowledge of environmental issues that face our communities. The proposed facility will be an area which schools and other community organizations will be able to access for practical learning opportunities and passive recreation.
Puente-Chino Hills Wildlife Corridor	Preservation of urban open space, conservation of regional biodiversity, and prevention of habitat fragmentation.
Pyramid Lake Black Bass Habitat Improvement	Improve refuge cover
Ralph C. Dills Park Master Plan [RMC03241]	This master plan is necessary to develop a vision for the passive recreational elements of the park and how those elements will best compliment the Los Angeles River, located to the westThe project is highly beneficial to the surrounding communities and has been recognized as a project that can successfully demonstrate the potential of reclaiming urban areas for use as open space and passive recreation.

Project Title	Project Purpose
Rancho Los Alamitos Native Garden Restoration [RMC03234]	The Native Garden Restoration Project implements the recommendations of a comprehensive Master Plan for the site and specifically a Landscape Restoration Plan. Completion of the project requires upgrading irrigation, drainage and electrical systems; renovating pathways and providing ADA access; pruning of specimen and perimeter trees and shrubs rehabilitation of artifacts, and the development of an interpretive training and visitor presentation program. The project improves a public open space resource, promotes stewardship of landscape through interpretive opportunities, encourages sustainable growth, and is a significant historic resource to the watershed.
Rancho Los Cerritos Historic Landscape Restoration [RMC03216]	Rancho Los Cerritos, built in 1844, is a National, State and local historic landmark and is one of the few remaining two-story adobes standing in Southern California. The Rancho Los Cerritos Historic Landscape Restoration involves the development of conceptual drawings, plans and specifications for restoration of a 33,350 square-foot arroyo, improvements to perimeter fencing, landscape and drainage, and renovation of a California native garden that was designed by noted landscape architect Ralph Cornell. The project also includes the design of interpretive panels and brochures to enhance the public's understanding of native plants and the relationship between historic and diverse communities of the Rancho and the Los Angeles River. The proposed improvements will assist in fulfilling Rancho Los Cerritos' Master Plan for continued preservation of the historic grounds and improved educational opportunities. The project improves a public open space, promotes stewardship through interpretation and kiosks, encourages sustainable growth, and is a significant historic resource to the watershed.
Recreation Park [C0207184_02-19-015]	Landscape and hardscape improvements, new restrooms at tennis courts, new tennis court fencing and perimeter landscape, court repairs, restroom repair at ball diamond.
Recreation Park Ball Field Rehabilitation [C0209915_RZ-19-066]	rehabilitation of oversized existing ball field to include: realignment of sprinklers, leveling of playing surface and realignment of ball field.
Recreation Park Improvements [C0209863_RZ-19-074]	restroom repair at ball diamond, landscape & hardscape treatment, new tennis court restrooms, new tennis court fencing and perimeter landscape, court repairs
Regional Wetlands and Watershed Management Plan for Coastal Southern California	To facilitate watershed planning on a regional basis by allowing the 5 county-based task force of the Wetlands Recovery Project to participate in the process of developing the WRP's watershed management planning tools.

Project Title	Project Purpose
Rehabilitation Of Barnes Park [C0209928_RZ-19-059]	Rehabilitation of Barnes Park, which includes the following; new restrooms, recreation room, meetings rooms, kitchen, office space, picnic shelters, re-sizing basketball courts, water fountains, playground areas, resurfacing of playground areas, spray poo
Restoration of Malibu Lagoon Peninsula	This project will regrade the peninsula at Malibu Lagoon and create a mudflat habitat for foraging birds.
Reyes Adobe [SMM-2170]	This matching grant provided $400,000 to the City of Agoura Hills for restoration of the Reyes Adobe historic site, and implementation of an interpretive plan. An almost 200-year-old adobe house and a barn are located on site.
Richland School Garden Resource Bond [957758]	9 corpsmembers will remove all unwanted weeds and shrubbery. Replant designated trees and bushes. Remove all items identified by sponsor. Restore garden to sponsors specifications and establish parkland environment. This Project description of work will be paid for by Resource Bond money. A total of 872 hours will be contributed from CCC to provide labor to this project, wich totals $14,562.00 Dollars. This will provide labor at Richland elementary for a total of 16 days.Project 04-4522
Rio Hondo Watershed Management Plan	The Rio Hondo watershed is an impaired 147 square mile subwatershed of the Los Angeles River watershed. Impairments, as listed on the state's 303(d) list inclued trash, copper, lead, zinc, ammonia, pH and coliform bacteria. The Rio Hondo is impacted by a diverse set of land uses from protected forest, to residential, to highly industrial. This project created a Watershed Management Plan that will address these issues through a stakeholder process to improve water quality throughout this diverse watershed.
Rio Vista Park Restoration And Conservation [RMC03221]	Rio Vista Park project is a proposal to restore native vegetation to the park, increase access to the park via pedestrian and bicycle trails, and provide interpretive displays on the historical significance of the area surrounding the park and the adjacent Rio Hondo River. The construction of new interpretive environmental education classrooms and the reconstruction of an existing ADA compliant ramp that links the park with Rio Vista School are also proposed. The project improves a public open space resource, enhances a riverfront greenway, provides enhanced accessibility to trails, and is a significant historic resource to the watershed.

Project Title	Project Purpose
River Center And Gardens Improvements Phase I [SMM-6116 #1]	The Los Angeles River Center and Gardens has a myriad of public uses including offices for the Mountains Recreation and Conservation Authority (MRCA) and other non-profit environmental and educational organizations, educations programming run by the MRCA's Education and Interpretive Division, rental space for meetings and special events, and daily guests to the Visitor Center. Before its acquisition in the winter of 1998, the facilities had been vacant for over seven years, and many deferred maintenance problems developed. Since 1998, the MRCA has undertaken both restoration of existing structures and other significant improvements. In an effort to bring the Los Angeles River Center and Gardens up to its highest potential and to serve a greater number of users, the MRCA is developing a new master plan for the property. Staff is consulting with various meeting and event planners to determine how best to upgrade the facilities. The current grant is being used for consultant services and improvements to the facilities including kitchen redevelopment, creation of new meeting rooms, installation of additional exterior benches, tables, and landscape amenities, and upgraded plantings.
San Clemente Island Fungal Experiment	To develop a bio-control agent for exotic Avena species on San Clemente using endemic pathogens (fungus and bacteria).
San Gabriel River Watershed Citizen Monitoring Program (WSP01-0147)	The purpose of this project is the first phase of a two phase project. This phase will be a plan for a citizen monitoring program that is comprehensive in scope and adaptable in nature to allow for modifications based on results of the monitoring, and is scaleable, so that the program can start out small and grow with time.
San Gabriel River Watershed Citizen Monitoring Program (WSP01-0147)	The purpose of this project is the first phase of a two phase project. This phase will be a plan for a citizen monitoring program that is comprehensive in scope and adaptable in nature to allow for modifications based on results of the monitoring, and is scaleable, so that the program can start out small and grow with time.
San Gabriel Spreading Grounds [RMC03228]	The City proposes to enhance an existing Class II bike lane on Mines Avenue by providing signage, striping, and improved public entrances to the Rio Hondo and San Gabriel Coastal Basin Spreading Grounds, which are multi-objective projects providing public access, passive recreational and educational opportunities, and aesthetic improvements.

Project Title	Project Purpose
San Jose Creek Bicycle Trail Phase II [RMC03230]	The San Jose Creek Bicycle Trail Phase II consists of the construction of a Class I bicycle trail from the San Jose Creek Bike Trail at Workman Mill Road to the San Gabriel River Bicycle Trail. The project closes the existing gap between these two major trails in the Los Angeles County area. In order to accomplish this gap closure, two bicycle bridges will be constructed, one over the San Jose Creek and the other over the San Gabriel River. In addition, the project will enhance the surrounding landscape and hardscape while also improving the slope protection and drainage in the area.
San Jose Creek Greenway Improvements Phase II [RMC03215]	This project will expand upon work already in progress along San Jose Creek between Workman Mill Road and the San Gabriel River confluence through Los Angeles County Proposition A funding. The ultimate goal is to convert the degraded upper slopes of San Jos Creek to an upland habitat with interpretive signage, native plants for shade and habitat, and trained community stewards. Phase II will provide interpretive signage, train community restoration stewards through three volunteer events, and plant 225 additional native plants on drip irrigation with volunteer and staff labor. The proposed landscape improvements will enhance the recreational aspects of the creek trail and the strong education and outreach component of the project will contribute greatly to community awareness of the hydrology and natural resources of San Jose Creek.
Santa Ana Region Aboveground Storage Tanks Program	The purpose of this program is to protect the public and the environment from the serious threat of millions of gallons of petroleum derived chemicals stored in thousands of aboveground storage tanks.
Santa Ana Region Bay Protection and Toxic Cleanup Program	The California Water Code requires that the State board and Regional Boards establish programs for the maximum protection of beneficial uses of bays and estuaries, focusing on water quality problems due to toxic substances.
Santa Ana Region Department of Defense Facilities Water Quality Program	Significant groundwater contamination has been detected at the six major Department of Defense Facilities in the Santa Ana region. The purpose is to investigate and cleanup the environmental problems at theses facilities.
Santa Ana Region Disposal of Hazardous Waste and Non-Hazardous Waste to Land Program	The purpose of this program is to properly manage the disposal of hazardous and non-hazardous waste so as to not diminish the beneficial uses of water in the region.
Santa Ana Region Groundwater Contamination From Volatile Organic Compounds Program	In 1984, legislators passed a bill requiring the California Department of Health Services to develop and implement a program to require the sampling of public drinking wells for volatile organic compounds. As a result of the indication of extensive organic compound contamination in the region, the State Water Board and Regional Water Board initiated the Well Investigation Program.

Project Title	Project Purpose
Santa Ana Region Leaking Underground Storage Tanks Program	This program addresses the fact that there are approximately 2,000 known cases of leading underground storage tanks in the Region.
Santa Ana Region Nonpoint Source Program	The State Water Quality Control Board adopted the Nonpoint Source Managment Plan n 1988, and it established a statewide policy for managing nonpoint source inputs to California's waters, and is included in the Santa Ana Region's Basin Plan.
Santa Ana River Basin Water Quality Control Plan	The federal Clean Water Act and the California Porter-Cologne Water Quality Control Act require that the Regional Board adopt a water quality control plan to guide and coordinate the management of water quality in the Region. This plan was adopted in 1975, and numerous amendments are adopted to modify the specific Basin Plan water quality standards and policies to reflect current water quality conditions and priorities.
Santa Clara River Enhancement and Management Plan	The purpose of the enhancement and management plan is to resolve conflicts among competing uses in the Santa Clara River while protecting the natural resources of the river.
Santa Clarita Comm. Ctr. Aka Newhall Comm. Ctr. [C0209948_RZ-19-071]	design and construction of 18,000 sq ft community center in Newhall (adjacent to the Jan Heidt Metrolink Station) that includes: basketball court, community garden, handball court, amphitheater and tetherball court
Santa Fe Springs Park Master Plan [RMC03210]	The project involves preparation of a master plan for Santa Fe Springs Park and assessment of the feasibility to expand the existing 14 acre park north with approximately 13 new park acres. The park is directly adjacent to the San Gabriel River and supports active and passive recreation. The feasibility study would look at developing a nature sanctuary on parcels north of Telegraph Road that are also directly adjacent to the San Gabriel River.
Santa Monica Bay Adopt-A-Gutter Education Project (2-120-254-0)	The objective of this project is to develop and test a citizen action program where the public can become aware of storm drain pollution and learn how to reduce it at the source.
Santa Monica Bay Aerial Deposition	To estimate annual load of pollutants to Santa Monica Bay via atmospheric deposition.
Santa Monica Bay Beach Valuation Study	Develop and utilize an economic model to estimate the value of beach recreation in Southeren California.

Project Title	Project Purpose
Santa Monica Bay BeachKeeper Citizen Monitoring Program (8-141-254-0)	Involve citzens in proactive identification of pollution from stormdrains in their communities, giving the BayKeeper the opportunity to eliminate the source of this pollution before more harm is done the the Santa Monica Bay.
Santa Monica Bay Boater Education Project	1) To reduce pollution to California waterways and the ocean, 2) to increase awareness within the boating community about pollution, pollution effects and solutions (e.g. Best Management Practices), and 3) to increase recycling opportunities for the public.
Santa Monica Bay Comprehensive Monitoring Program	To develop and implement a coordinated regional monitoring program for the Bay's environmental conditions.
Santa Monica Bay National Estuary Program	The purpose of the project is facilitate implementation of the comprehensive, watershed-based Santa Monica Bay Restoration Plan. The key issues addressed in the Plan are public health protection associated with swimming in the Bay and eating Bay seafood; reducing and preventing pollution to the Bay and protecting and restoring the Bay's habitats and resources.
Santa Monica Bay Public Involvement and Education Program	To provide seed moneys to organizations / agencies to help educate various Los Angeles County communities about ways to protect and restore Santa Monica Bay.
Santa Monica Bay Restoration Project - Evaluation of Environmental Status and Trends	To assess, for the first time since completing the Bay Restoration Plan, improvements in the health of the Santa Monica Bay, as well as remaining challenges.
Santa Monica Bay Restoration Project - Marine Resources Inventory and Habitat Mapping Project	To provide a visual "tour" of Bay habitats and species. Specifically, to provide: 1) a tool for student research into ecological and evolutionary relationships among organisms; 2) a reference for planners and resource managers; and 3) an educational opportunity for interested members of the public.
Santa Monica Bay Study (7-131-250)	The purpose of the Santa Monica Bay Study was to increase the understanding of pollution problems in the Bay and to assess what measures would be necessary to better protect and enhance the Bay environment.
Santa Monica Mountains Steelhead Habitat Assessment	Education, training, Planning, Survey, study, research
Santa Monica Mountains Steelhead Habitat Assessment	Conduct detailed assessment of fish passage barriers and habitat quality, compile and organize existing data sources, set priorities for recovery actions in Santa Monica Mountains.

Project Title	Project Purpose
Santa Monica Pier Urban Runoff BMP Project	The purpose of this project is to reduce urban runoff pollution entering into Santa Monica Bay from in and around the Santa Monica Pier and to protect Bay water quality and beneficial uses in and around the Pier.
Seasonal Bacteria Study-Orange County	1). Contribute to the water quality parameter data base currently being compiled at Southern California Marine Institute (SCMI) and the Regional Water Quality Control Boards. 2). Train students, chapter interns, and volunteers in marine science and scientific methods. 3). Extend the results of this project to include the public (public outreach) and community outreach.
Sepulveda Wildlife Reserve Revegetation Project	Develop and maintain reservoir lands for wildlife conservation; mitigate prior agricultural land development to provide for habitat types; grassland, riparian woodland, coastal sage scrub, and aquatic habitat.
SG Watershed Habitat Restoration Assessment [RMC03247]	The San Gabriel Mountains Regional Conservancy has proposed the development of a watershed plan to address the Upper San Gabriel River, Walnut Creek, and San Jose Creek Subwatersheds. The plan anticipates working with stakeholders and consultants to establish reasonable habitat restoration goals and objectives. This project will result in an immediately useable plan to assist the RMC in the development of the habitat plan.
SGR Environmental Graphic Design Services [RMC03236]	The LACFCD requested the grant to develop a signage and environmental graphic plan, whicht would be an addition to the existing contract between the LACFCD and Moore Iacofano Goltsman, Inc. (MIG) for the development of the SGRMP, in order to encourage recreational activities along the river, provide safe and well-defined access points and connection, and promote nearby watershed projects.
Sierra Madre Youth Activity Center [C0209695_RZ-19-065]	A development project in the City of Sierra Madre, Sierra Madre Youth Activity Center, a second story addition to the existing Community Recreation Center to serve as the new Youth Activity Center, including a kitchen, staff office, restrooms and a large
Skate Park Fencing [C0207137_02-19-002]	Addition of fencing at Teen Center/Skate Park.
Small Generators Hazardous Waste Disposal (3-086-225)	To study and protect ground water supplies.
Smith Park Playground Renovation Project [C0209895_RZ-19-072]	renovation of playground at Smith Park for safety that includes: ADA compliance, relocation of playground, removal of existing equipment, addition of resilient safety surface

Project Title	Project Purpose
Santa Monica Mountains Benefit Assessment District Match [SMM-03146]	This grant serves to vund the general benefit portion of the capital expenses funded by the Santa Monica Mountains Open Space Preservation Districts 1 and 2 . The grants will be used by MRCA to fund portions of acquisitions and improvements within the Santa Monica Mountains Open Space Preservation Districts.
South Gate Riparian Habitat Restoration [RMC03237]	The South Gate Riparian Habitat Restoration Project site is in the cities of Lynwood and South Gate, near the convergence of the Interstate 105 Freeway, Interstate 710 Freeway, Imperial Highway, and the channelized Los Angeles River. Impacts to the area from these historic development projects have severely degraded the environment and quality of life from this park-poor area. This project will repair some of the damage done to the habitat of the area when the Los Angeles River was channelized by constructing a 12.5 acre functional seasonal wetland, bird habitat, and much needed accessible open park space (Exhibit A). The seasonal riparian wetland will also serve to filter stormwater runoff, improving water quality in the watershed. In addition to the 12.5 acre seasonal riparian habitat creation, this project will utilize interpretive signs scattered along short trails to be constructed on the site. The site will also provide visual enhancement to a local LARIO bike trail and access road.
Southern California Marine Institute Regional Volunteer Monitoring Program	The goals of the project are: to provide an illustrated field guide for sampling and analysis performed by volunteer citizens, to encourage and increase public involvement, and to maximize data quality from citizens in volunteer monitoring programs, to expand and coordinate seasonal water monitoring "snapshot" efforts, to assist groups in data entry and tranmittal, to increase public awareness and stewardship of our water resources, and recommend revisions to the Southern California Volunteer Monitoring Quality Assurance Project Plan.
Southern California Wetlands Recovery Project [4508]	The Southern California Wetlands Recovery Project is a partnership of 17 state and federal agencies, working in partnership with local agenices and environmental organizations to implement a regional strategy for wetlands recovery in the region.
Southern Steelhead Survey of the Topanga Creek Watershed	Survey, study, research
Stabilize And Maintain Streambank In Campground [TBA400-00]	Soft engineer solution to creek erosion in campground

Project Title	Project Purpose
Study of Augmenting Groundwater Supplies Through Capture of Urban Runoff (WSP01-0136)	The purpose of this project is to assess the impacts of capturing urban storm water for infiltration, and utilizing it to augment local groundwater supplies. This project is part of a larger research study, the LA Basin Water Augmentation Study, whose long-term goal is to evaluate the potential of stormwater infiltration for reducing surface pollution and recharging groundwater supplies, thereby reducing dependence on imported water sources and providing additional benefits.
Study Of Threatened Desert Tortoise [TBA716-00]	Locate and map population of state & federally listed threatened Desert tortoise on Saddleback`s 3,100 acres.
Sun Valley Watershed Management and Watershed Replenishment Project (WSP01-0134)	The purpose of this project is to develop a Sun Valley Watershed Management Plan to recharge and reuse an annual average of approximately 2,100 acre-feet of storm water form a 2,800 acre urban watershed tributary to the Los Angeles River. It would also eliminate flooding and provide for greater open space and recreational opportunities in this under-served community in the East San Fernando Valley , and eliminate pollutant loading from urban runoff to the Los Angeles River.
Sun Valley Watershed Management and Watershed Replenishment Project (WSP01-0134)	The purpose of this project is to develop a Sun Valley Watershed Management Plan to recharge and reuse an annual average of approximately 2,100 acre-feet of storm water form a 2,800 acre urban watershed tributary to the Los Angeles River. It would also eliminate flooding and provide for greater open space and recreational opportunities in this under-served community in the East San Fernando Valley , and eliminate pollutant loading from urban runoff to the Los Angeles River.
Sycamore Park Trail Development [RMC03220]	The project would develop the first trail increment of the Citys five site city-wide trail system. Sycamore Canyon Park is an existing 50 acre city park that provides active recreation along with an undeveloped trail that begins at the existing parking lot near Golden Springs Drive and travels through undeveloped areas east toward Diamond Bar Boulevard. The undeveloped trails follow near an existing stream and four acres of walnut woodlands capable of supporting California Gnatcatcher and the Arroyo Toad. The proposal would result in a clearly defined path surfaced with decomposed granite and redwood headers. Railroad tie steps will be installed along steeper grades to improve user safety. View decks are proposed overlooking the stream and near the trailhead at Diamond Bar Boulevard.

Project Title	Project Purpose
Tejon Park Expansion And Una Lake [RMC03227]	Una Lake is a natural sag pond, which is an enclosed depression formed where active or recent fault movement along the San Andreas Fault resulted in impounded drainage. This proposal is for acquisition of Una Lake and surrounding wetland and hillside properties for preservation as natural open space and the expansion of Tejon Park. It encompasses approximately four acres of a 68-acre parcel located along the east side of Sierra Highway approximately mile south of Avenue S. The pond is primarily open water habitat, although portions of the flooded edges support riparian woodland and scrub habitat. The lake supports several species of waterfowl and fish. Una Lake provides foraging and nesting habitat for red-winged blackbird, mallard, belted kingfisher, double-crested cormorant, ruddy duck and American coot as well as several red-eared sliders and introduced turtle species.
Temescal Canyon Improvements [SMM-6115]	Improvements in Temescal Gateway Park and the Temescal Conference and Retreat Center continued this year with the completion of the new utility infrastructure project. This project upgraded the electrical, gas and water service to all buildings. These upgrades have increased the safety and utility of existing structures. The infrastructure project included installing all the electrical lines underground. Ultimately the proliferation of telephone poles in the back of the canyon will be removed, thus restoring the beauty of the canyon's tree canopy.
Temescal Canyon Master Plan Phase II [SMM-03131]	The Mountains Recreation and Conservation Authority (MRCA) has been developing a complete master plan for the facilities at Temescal Gateway Park. Initial funds were granted for this project as Temescal Canyon Master Plan, Phase I. Phase II will fund improvements to the facilities that that have been identified as high priority needs and that will generate an immediate increase in the usability of the facilities. Significant improvements will include the reconfiguration of the BBQ patio/picnic area outside the newly remodeled dining hall and the amelioration of the adjoining Woodland Terrace. Rehabilitation of these areas will create a nice sequence of space from a lovely outdoor lawn, to a charming patio, and finally into the rustic dining hall. Improvements at Temescal are targeted to benefit both the MRCA's own education and interpretation programs and to make the park more appealing and usable to outside groups.

Project Title	Project Purpose
Temescal Master Plan Phase I [SMM-6117 (a)]	The Mountains Recreation and Conservation Authority (MRCA) is undertaking the development of a complete master plan for the facilities of Temescal Gateway Park. The MRCA seeks to enhance the current conference center uses to generate a higher level of public use. Staff will consult with various meeting and conference professionals to determine what levels of accomodations and meeting rooms would be ideal, and how to make the interface of all users as safe as possible. The funds will cover both consultant services and initial improvements to the facilities including paving of roads and parking areas, landscaping and building upgrades. Improvements will benefit both the MRCA's own education and interpretation programs and the programs of outside groups.
Temescal Master Plan Phase I [SMM-6117]	The Mountains Recreation and Conservation Authority (MRCA) is undertaking the development of a complete master plan for the facilities of Temescal Gateway Park. The MRCA seeks to enhance the current conference center uses to generate a higher level of public use. Staff will consult with various meeting and conference professionals to determine what levels of accomodations and meeting rooms would be ideal, and how to make the interface of all users as safe as possible. The funds will cover both consultant services and initial improvements to the facilities including paving of roads and parking areas, landscaping and building upgrades. Improvements will benefit both the MRCA's own education and interpretation programs and the programs of outside groups.
The Beachkeeper Citizen Monitoring Monitoring Program (8-141-254-0)	To involve citizens in the identification of pollution from stormdrains in their communities.
The Park Improvements [C0207170_02-19-005]	Rehabilitate recreation center meeting rooms, gymnasium floor; purchase and install new basketball back-boards, outdoor bleachers; various improvements to park grounds.
The Park Rehabilitation Project [C0209983_RZ-19-077]	A development project in the City of La Habra Heights at "The Park" to include development of a new water trough for horses, new tot seats for swings, commercial roll-up door for shed, retrofit bleachers in horse arena, and electronic scoreboard, glas
Think River! [RMC03218]	THINK RIVER! is a program focused on developing youth watershed stewardship through the planning and implementation of three environmental education involvement opportunities: a High School Student Mentor Program, a Teacher Education Workshop, and a Youth Watershed Conference. This program will provide youth educational opportunities to study the relationships of water quality, water supply and use, and habitat with their community. It will provide youth oriented public involvement in implementing a Watershed Plan and will build long-term partnerships with youth, teachers and school districts for future environmental education enhancement.

Project Title	Project Purpose
Third District Capital Outlay Projects [SMM-0308]	Various capital outlay projects throughout the Third District of Los Angeles County.
Tidewater Goby Reintroduction into Malibu Lagoon	The purpose of this project is to successfully reestablish the tidewater Goby as a functioning member of the Malibu lagoon eco-system in order to restore historic levels of biodiversity.
Topanga Creek (DWR V70031)	Increase bank and channel stability. Improve spawning habitat for steelhead.
Topanga Creek Watershed Water Quality Study	To assess water quality problems in the Topanga Creek watershed and identify ways to involve the community in improving water quality by increasing awareness and generating locally implemented solutions.
Topanga Headlands Litigation [6095]	Litigation Settlement
Topanga SP, Lower Topanga Canyon Immediate Public Use And General Planning [6029-0203-2]	This project will implement Action Items noted within the Lower Topanga Canyon Acquisition Interim Management Plan (IMP). This proposal includes such actions as: a) control/remove invasive plant species, b) remove sources of water quality impacts, c) remove non-historic vacant structures, d) implement appropriate signage at proposed parking areas, trailheads, overlooks, sensitive resource areas, e) install trail and parking improvements.
Topanga SP, Rehabilitation Of Sassafras Nursery Trespass [6029-0304-8-10]	This project will restore the Sassafras Nursery trespass site in Topanga State Park to its natural condition. The project will include demolishing and removing existing structures and rubble, locating and removing existing waterlines and septic systems, assessing and remedying any hazardous materials and associated spills or soil contamination, and removing non-native plants. After the removal of these items, the adversely affected portions of the site will be re-graded to an acceptable pre-trespass condition and re-planted with native vegetation.
Topanga SP, Repair Residence - Mold Removal [6029-0203-DM24]	This project makes repairs to a residence at Topanga SP including mold abatement.
Trail, Bike Path, Access, Signage 7 Low Impact Rec. Acess Improvement [RMC03248]	The WCA has identified trail access and signage improvements as a critical need for the river corridors in our territory. RMC considers this project a critical element that should be addressed in order to encourage recreational activities throughout the watershed, provide safe and well-defined access points and connection, and promote nearby watershed projects.

Project Title	Project Purpose
Tucker [SMM-6112 #1]	The property contains key trail connections to Will Rogers State Park and is a key element of the Mulholland Corridor viewshed. The acquisition adds 1,518-acres to the Big Wild and protects key habitat linkage to the 405 Freeway.
Tucker [SMM-6112]	The property contains key trail connections to Will Rogers State Park and is a key element of the Mulholland Corridor viewshed. The acquisition adds 1,518-acres to the Big Wild and protects key habitat linkage to the 405 Freeway.
Tuna Canyon [SMM-03155]	The Tuna, Pena, and Pierda Gorda Canyon Watersheds contain some of the most remote coastal watersheds in the portion of the Santa Monica Mountains that is close to urban areas. This 240-acre portion of the 1,255-acre overall Tuna Canyon Park acquisition contains dense chaparral, with pockets of oak woodland, grassland, and coastal sage scrub. Tuna Canyon Park links over 18,000-acres of contiguous protected open space from Topanga State Park west to Las Flores Canyon. More than half of the property lies within Los Angeles County Significant Ecological Area Number 10. Deep canyons and ridges support a rich mosaic of coastal Southern California plant communities including sycamore riparian woodland, oak woodland, coastal sage scrub, and native grasslands. Tuna Creek, one of the most pristing aquatic habitats in the Santa Monica Mountains, courses through the eastern end of the property to the ocean.
Upper Mandeville [SMM-877 #2]	This grant of $52,315 was for geotechnical soils reports, preliminary design and studies, neighborhood presentations and civil survey of the site that is located in the Santa Monica Mountains with stunning views of the Pacific Ocean and access to many ridgeline trails.
Upper Ramirez - Kabrin [SMM-6114]	This 26-acre property straddles the ridgeline between Ramirez and Escondido Canyons. It provides critical viewshed from Kanan Dume Road and includes a paved trail that is part of the designated trail between Kanan Dume and Escondido Canyon.

Project Title	Project Purpose
Upper Santa Clara River Watershed Arundo and Tamarisk Removal Plan (SCARP)	The establishment of noxious and invasive plants have detrimental impacts to native habitat and cause flooding and wildfire hazards. The removal of arundo and tamarisk is beneficial for habitat restoration and decreases flooding and wildfire hazards. The goals of the Upper Santa Clara River Watershed Arundo and Tamarisk Removal Plan (SCARP) are to: 1) develop a long-term plan for the eradication of arundo (Arundo donax) and tamarisk (Tamarix spp.) in the Los Angeles County portion of the Santa Clara River; 2) develop a programmatic CEQA/NEPA documents to analyze the impacts of the long-term plan; 3) programmatic permits for arundo and tamarisk removal in the upper Santa Clara River and tributaries; and 4) to implement a site-specific removal project on a 297-acre property owned by the City of Santa Clarita. The programmatic CEQA/NEPA documents and permits will simplify the environmental planning process required for all projects, even beneficial ones. The SCARP will lead to coordinated implementation in the watershed while reducing the time and financial input for both the project proponent and the regulatory agencies.
Urban Interface Wildlife Conservation [NP-03175]	Nonprofit matching grant to the Mountain Lion Foundation for community education on liviing next to wildlife habitat.
Urban Outreach Strategy Project [NP-02171]	The California Institute of Public Affairs (CIPA) conducted an urban outreach strategy project for the Santa Monica Mountains Conservancy. The project lead to an active role in the Fifth World Parks Congress held in South Africa in July 2003. CIPA also developed a regional structure for cooperation in greater Los Angeles, and made recommendations on how the Augustus F. Hawkins Natural Park and Temescal Gateway Park could become state-of-the-art demonstration centers for urban outreach.
USGS-SCAMP Southern California Areal Mapping Project	As a cooperative mapping project between the USGS and the California Division of Mines and Geology, the goals are to provide multi-purpose geologic map information for the population centers of southern California. The geologic information is presented on map sheets at several scales, covering 28 1:100,000 scale map sheets covering much of southern California. In response to recent El Nino events the landslide and debris flow maps have taken on immediate uses. Prediction of locations and likelihood of various hazardous conditions that may result from El Nino storms can be found on the internet at: http://geology.wr.usgs.gov/wgmt/elnino/

Project Title	Project Purpose
Utilities At Malibu Creek - Resource Bond [959584]	This 2 part project is funded by straight reimbursment from California State Parks and funded by (Resource Bond Allocation) CCC will be doing the following as part of project # R04-4527. 1. The initiative that is set forth to partially fund this project through Resource Bonds will effect the park like environment. CCC will be reconstructing pathways for public access and safety.2. CCC will also be constructing landscape appearance in front of the entrance to the Park for beutification of the land and appearance it will have. 3. CCC will take part in relocating the main water supply so that the new built restrooms will be in operation for public access.4. CCC will also be planting native species to the suorounding area in various locations. 5. CCC will also be providing labor to help construct the new Angeles District, State Parks 3 Part trailer installation.6. CCC will also be installing Storm water protection placements as needed throughout the duration of the project.Project 04-4527
Valencia Project	To mitigate for losses of riparian habitat.
Verdugo Mountains Open Space Preserve [SMM-858]	The property contains several prominent ridgelines and is highly visible from the Rim of the Valley Trail Corridor, the 210 Freeway and the Angeles National Forest. Equally dramatic are the vistas from the upper slopes of the property. An extensive network of existing trails on the property contribute to the recreational value of this property for over one million nearby residents.
Vincent Lugo Park Master Plan [RMC03209]	The Vincent Lugo Park Renovation is a proposed Master Plan project that will explore renovation of the park, enhance the interface with the Alhambra Wash and provide environmental education opportunities for the community and the neighboring McKinley Elementary School. The project improves a public open space resource, enhances a riverfront greenway, provides enhanced accessibility to the access road along Alhambra Wash, and promotes watershed stewardship through the creation of an educational footpath between the park and an adjacent elementary school.
Vista Hermosa Documentary [NP-03108]	The Los Angeles Cable Television Access Corporation(LA36) will create an educational documentary that will interpret the Vista Hermosa park project. The film, """"Vista Hermosa"""" will increase public awareness of the Conservancy's urban

Project Title	Project Purpose
Washington Park Master Plan Phase I [RMC03205]	The Washington Park Master Plan Implementation Phase I focuses on the development, including rehabilitation and restoration, of portions of Washington Park pursuant to the Washington Park Master Plan. The scope of the project includes the rehabilitation of an arroyo, the development of an interpretive center, development of the historic El Molino Walkway, restoration of a historic picnic area and the construction of a demonstration garden. The project was developed in partnership with Friends of Washington Park and the Theodore Payne Foundation. The project improves a public open space resource, promotes stewardship of landscape through interpretive opportunities and kiosks, encourages sustainable growth, and is a significant historic resource to the watershed.
Watershed Education In Multi-Lingual Communities [RMC03219]	The Watershed Education in Multi-lingual Communities Program proposes to train Mexican American Opportunity Foundation (MAOF) staff in watershed stewardship for future integration of environmental education into Naturalization Services programs for low-income, urban communities. This program will provide low-income and immigrant communities exposure to environmental issues in their native languages. Participants would study the relationship between the effective use or sustainability of natural resources and their quality of life.
Watershed Improvement [RMC03250]	The LACC gives young adult corpsmembers an opportunity to develop their education, work and leadership skills. They alternate between a week of work and a week of school as part of the program requirements. The LACC is a lead agency and local model for Building Up Los Angeles, a project of AmeriCorps, the National Service program. LACC will be designated to work on certain projects within the San Gabriel and Lower Los Angeles River watersheds.

Project Title	Project Purpose
Watershed Management Plan for the San Gabriel River Above Whittier Narrows	The planning goals of the Watershed Management Plan for the San Gabriel River Above Whittier Narrows included: 1. Improve water quality and reduce non-point source pollution by addressing land use applications, landscape resource efficiency, urban runoff, and public involvement. 2. Protect and enhance local water resources of the upper San Gabriel River watershed by addressing groundwater resources, sustainable water practices, stormwater and flood management, sedimentation and erosion, and public and agency education. 3.Protect and restore terrestrial and aquatic habitat and habitat connectivity by addressing wildlife habitat, habitat connectivity, and urban wildlife. 4.Provide for open space protection and beneficial land use relationships by addressing open space, land use relationships, local conservation planning, stewardship, and transportation and land use. 5. Establish an on-going community and stakeholder process to guide development of the technical reports and the Watershed Plan that included opportunities for public input (watershed roundtables), youth watershed education, university and college participation, and youth stewardship opportunities. 6. Identify key pilot projects and citizen monitoring and stewardship programs that demonstrate sustainable Best Management Practices (BMPs), multiple use in design, stormwater capture, resource efficient landscapes, habitat restoration, water quality monitoring, and land stewardship.
West Coast Seawater Intrusion Study (5-201-250)	The purpose of this study was to analyze the study area and assess its principal inflow and outflow components.
West Mojave Coordinated Management Plan	To define land management and land use strategies for the western region of the Mojave Desert that will: 1) Provide for the protection of natural ecosystems in appropriate areas, within the context of biodiversity, so that viable populations of plant and animal species can be maintained and future listings of species as threatened or endangered can be minimized. 2. Provide for the conservation and recovery of State and Federally listed and candidate plant and animal species as wild populations in their natural habitat in a manner that will maintain long-term population viability and genetic diversity. 3. Provide for appropriate resource uses and community expansion while, with a regional context, enhancing the long-term viability of plant and animal species and the ecosystems upon which they depend. 4. Provide for the streamlining of procedures.

Project Title	Project Purpose
West Mulholland Trailhead [SMM-6108]	The 61.4-acre 21000 Mulholland property gives San Fernando Valley residents easy access to the 20,000-acre Big Wildthe largest urban wilderness area within the United States, fulfilling Governor Gray Davis urban parks initiative. Combined with the recently-acquired 320-acre Avatar property, the properties provide the last portal to Topanga State Park. As a result of these major acquisitions, the undeveloped character of dirt Mulho 61.4 acres of pristine California mixed oak-walnut woodland and coastal sage scrub vegetation Provides easy access for 2.1 million residents of the San Fernando Valley and Westside areas of Los Angeles into the 20,000-acre natural area known as the Big Wild. Provides the last major portal into Topanga State Park and Mulholland Gateway Park. The full service trail head will include state-of-the-art environmentally sustainable elements including solar lighting, drip irrigation and self-composting toilets. A joint project of the Santa Monica Mountains Conservancy and California State Parks With site improvements, the park will provide visitors with a parking area, restrooms, interpretive displays, picnic areas and multiple hiking, biking and equestrian trailslland Drive, the last remaining sample of rural 1920s Los Angeles will be preserved forever.
Westridge-Canyon Back Wilderness Park [SMM-591 #1]	The acquisition of Westridge-Canyon Back Wilderness Park, formerly know as the Eastport property, culminates over a decade of preservation efforts by Yaroslavsky, the Conservancy and many surrounding community groups. Eastport was the single largest privately owned open space remaining in the City of Los Angeles. The property had at one time been permitted for the development of over 500 homes. It had also been slated to be used as access for potential Rustic and Sullivan Canyon landfills until Yaroslavsky successfully removed the property from the Sanitation District's map. The park is contiguous with the 20,000 acre urban wilderness park system known as the """""""""""Big Wild""""""""""". The property is bordered by upper Mandeville Canyon, Sullivan Canyon, Mission Canyon and the Conservancy's San Vicente Mountain Park. The dominant feature of the site is a north-south ridgeline, known as the Westridge fire road. This fire road has long been used by hikers and mountain bikers, and is accessible from both the San Fernando Valley and the West Side. Westridge-Canyon Back Wilderness Park will now be the Conservancy's eastern gateway to "

Project Title	Project Purpose
White Point Trail [1031171]	The CCC will provide Labor to construct trails at the White Point Nature Preserve of two types:Type 1 will be a series of connecting trails of 2 miles in total length on a moderate incline with the removal of minimum rock and vegetation completing a standard natural terrain path of 2 ft wide-To Be completed with grant funding-Type 2 would be to build a little more than 1\2 mile handicapped trail of 60"""""""""""""""""""""""""" to accommodate two wheelchairs passing on a bedrock of compacted granite meeting ADA specificationsAnd additional work to include constructing and shoring miscellaneous natural structures, shelters and sign age throughout the trail paths or at origin or destinatio
Whittier Greenway Trail [RMC03245]	The project would study potential connections and develop feasible alternatives for a connection from the abandoned railroad right-of-way in the City of Whittier to the San Gabriel River and Pio Pico State Historic Park.
Wild Walnut Park [NP-0378]	This matching grant provided $29,170 to the City of Calabasas to implement improvements to Wild Walnut Park, located at Headwaters Corner in the upper Los Angeles River watershed. Those improvements included installation of a trail, fencing to protect the walnut grove, benches, tables, and signs.
Will Rogers SHP, Historic Landscape Restoration [6029-0203-1]	This project will restore historic landscape elements of the original Will Rogers Ranch, circa 1920s-1935, such as pastures, ornamental landscape, fences, culverts, and ranch-related structures. Key areas that will be addressed to improve the overall infrastructure include: drainage; water quality; stabilization, repair and rehabilitation of historic buildings and features; and, replacement of lost or damaged plantings with historically correct ones.
Will Rogers SHP, Repair Flagstone Porch [6029-0203-DM25]	This project repairs the flagstone porch at Will Rogers SHP to improve visitor safety.
Will Rogers State Historic Park - Visitor Center Improvements [IEP008-00]	This project will provide for the design, fabrication and installation of exhibits at the Will Rogers State Historic Park Visitor Center.
Woodland Duck Farm [RMC03255]	The RMC Board approved a Proposition 40 (Prop 40) grant of $1.3 million to the Watershed Conservation Authority (WCA) on April 17, 2003 for the Woodland Duck Farm project. The purpose of the Prop 40 grant as approved is to complete the acquisition and to carry out necessary improvements to the property consistent with the use of the main house for office space. It is now anticipated that additional professional services related to the acquisition may be necessary.

Project Title	Project Purpose
Woodland Duck Farm Planning [RMC03243]	Acquisition of the Woodland Duck Farm property for open space purposes offers potential benefits to the local community and to people throughout the region. These potential benefits include access to an extensive network of open space, passive recreation opportunities for a local population of 350,000 people, an opportunity for watershed education, access to over 6 miles of local and river trails, public access to riverfront habitat, flood protection and enhanced water quality.The Woodland Duck Farm is located along the San Gabriel River just north of the confluence of the San Gabriel River and San Jose Creek. The property consists of two portions: 45-acres along the west bank of the San Gabriel River and 12-acres on the eastern side of the 605 freeway.
Wrigley Heights Acquisition [RMC03203]	The Wrigley Heights acquisition project is a 20-acre site adjacent to the east bank of the Los Angeles River, immediately south of the 405 Freeway and north of Wardlow Road. The majority of the site was formerly used as an oil and water separation facility for a consortium of oil companies and is currently considered a Brownfield site. The project application specifies that the landowner will clean up the contamination as part of the sale price. Once acquired, it is proposed that the site be restored as freshwater wetlands surrounded by high and low riparian woodlands and other publicly accessible open space uses. The strengths of this project were in the urban, recreational, and open space factors as well as educational and cultural considerations. There is also significant potential to restore natural habitat on the site. The Coastal Conservancy has identified the project area as a potential wetlands restoration site as part of the Southern California Wetlands Recovery Project. It is also currently listed as a potential project site in the Los Angeles River Master Plan. Further, this project is a key link to the 51-mile Los Angeles River Parkway.
Youth Activity Center [C0207206_02-19-008]	Construction of a 3,400 sq ft second story addition to the existing community center to serve as the Youth Activity Center. Will include space for homework assistance, computers, music, art, job training, and volunteer opportunities. Facility to have a ki

Project Title	Project Purpose
Zone 1 Ditch Channel Enhancement [RMC03231]	The Zone 1 Ditch channel (Lario Creek) was constructed to divert water from the San Gabriel River through the Whittier Narrows Nature Center area to facilitate groundwater recharge into the Rio Hondo Spreading Grounds. The goal of the Zone 1 Ditch Channel Enhancement Project is to perform stream bank stabilization and restoration while increasing the channels ability to divert water for groundwater replenishment. Stream bank stabilization and restoration will be accomplished using bioengineering techniques, removing invasive vegetation, and revegetating with native plants. Enhancing and restoring the vegetation will also promote ecological diversity, provide additional wildlife habitat, and increase its educational value. The project area is host to over 250 species of birds. The federally endangered least Bells vireos (Vireo bellii pusillus) and Special Status Species like the double-crested cormorant (Phalacrocorax auritus) and Coopers hawk (Accipiter cooperii) are known to frequent the project area.Vegetation planted to promote bank stabilization will increase the percentage of the local urban forest thereby improving air quality, increasing shade and comfort, and supporting riparian and aquatic habitat. The project will contribute significantly to the recreational opportunities for the communities of South El Monte, Pico Rivera, Whittier, and nearby communities
Orange County	
Agricultural BMP Implementation, San Diego Creek (0-081-258-0)	Agriculture located within the Newport Bay Watershed has been included as a contributing source of nitrogen and phosphorus loading. A phased Nutrient TMDL has been adopted that specifies load allocations that agricultural producers must meet at the end of 2002, 2007, and 2012. The goal is a 50% reduction in nutrient loading by 2012. A lack of actual data regarding surface runoff from agriculture in the watershed resulted in a baseline monitoring project initiated in early 2000. The goal of this project is to educate agricultural producers on BMPs that will assist them with improving the quality of surface runoff or eliminating surface runoff completely. In addition, the project consists of a field component to assess the effectiveness of various BMPs.
Ailanthus Tree Eradication - Chino Hills State Park (0454)	The eradication of the exotic Chinese Tree of Heaven from the Chino Hills State Park for the restoration of native oaks, willows and shrubs.
Aliso Beach Design Assistance [4892]	Funding for architectural and engineering drawings for various wheelchair access improvements and a new building to house new food concession, wheelchair accessible restrooms, and county lifeguard admin office at Aliso Beach Park.

Project Title	Project Purpose
Aliso Creek 205(j) Water Quality Planning Study	The water quality planning study was intended to support the development and subsequent implementation of specific management strategies to enhance water quality and reduce the impairments in the Aliso Creek watershed. The work was particularly focused on addressing the bacterial levels in the watershed since the lower mile of the creek is designated as impaired for coliform on the Clean Water Act Section 303(d) list.
Aliso Creek Watershed Management Study	To evaluate and identify projects to restore, stabilize and enhance the resource values of Aliso Creek.
Anaheim Bay Restoration	Habitat conservation to mitigate development impacts.
Arundo Control [TBD434-00]	Continue removal of invasive, exotic arundo plant from riparian areas in the Santa Ana River and Carbon Creek, and restore native vegetation.
Arundo Control / Carbon & Telegraph Creeks - Chino Hills State Park (0455)	The removal of Arundo from riparian woodland areas, which is supplanting native willow trees.
Assess and Reduce the Sources of Plastic and Trash in Urban and Coastal Waters	The primary goal of this project is to reduce the land-based inputs of plastic debris, which degrade water quality and impair beneficial uses of inland and coastal waters. The long-term foals include encouraging public policy makers, local governments, industry and the general public to reduce the soucres of plastics and trash discharges by developing pro-active source reduction strategies that go beyond trapping and catch basins and industrial housekeeping practices.

Project Title	Project Purpose
Baby Beach in Dana Point Harbor Clean Beaches Initiative Project	Baby Beach in Dana Point Harbor, Orange County, California, is listed every year by several environmental organizations as one of the top 10 most polluted beaches (with bacteria) in the State of California. Baby Beach is a man made beach. Dana Point Harbor and Baby Beach were constructed by the U.S. Army Corps of Engineers in 1970 with the construction of a large breakwater. Prior to 1970 the location of Baby Beach was a rocky tidal interchange with little sand. Baby Beach is a pocket beach located in the far inside corner of the harbor and the sand is resupplied about every five years. The beach is frequented by families with small children due to calm water. This beach is a very small beach but well known in the County and draws visitors from Orange County as well as inland Counties and other States. In 1999, with the creation of AB411 ocean water quality standards, the County of Orange agressively investigated the source of the bacteria problem. The County dye-tested the adjacent restroom to determine if any dye appeared in the beach water, videotaped all sewers in the area, drastically reduced the irrigation of the adjacent grass picnic areas, installed no-bird feeding signs and increased enforcement, dye tested holding tanks of adjacent moored boats, installed cloth netting under the Baby Beach public fishing pier to keep the pigeons and gulls from roosting, and attempted to plug a 24-in diameter storm drain entering Baby Beach during the summer months. Despite all these actions the bacteria posting signs remained on the beach for most of the year. It is worthwhile to note that the AB411 violations at this beach are not gross exceedences. This beach consistently barely fails bacteria standards. Therefore, perhaps a minimum amount of BMPs may be required to bring this beach into compliance with AB411 standards. The purpose of the project is to perform studies to determine the source of the bacteria problem and then implement structural BMPs to reduce the bacteria at Baby Beach. The goal of the project is to reduce the number of times per year that the beach water contains levels of bacteria in excess of AB411 standards.
Big Canyon Riparian Restoration Plan [02-104]	The project will prepare technical background studies and a restoration plan for a 45 acre portion of the lower Big Canyon Creek watershed.
Bowers Museum [C0204016_CH-30-001]	BOWERS MUSEUM

Project Title	Project Purpose
California's Coastal NPS Control Implementation and Statewide NPS Program Coordination	The goals of this project are to: (1) enhance coordination of all partners involved in implementing actions identified in the Nonpoint Source (NPS) Program Plan; (2) support and promote collaboration amongst the Interagency Coordinating Committee (IACC); (3) support implementation of 61 identified management measures (MMs) by 2013, in part by co-leading and convening meetings for the IACC; (4) enhance CCC's local NPS outreach efforts by targeting resources on priority issues including local coastal program development and update; (5) support California's water quality agencies' efforts in implementing their storm water programs; (6) continue internal staff NPS oversight and training to ensure consistency in applying NPS measures; and (7) protect California's Critical Coastal Areas (CCAs) by developing site-specific action plans.
Caltrans: Dune Restoration	Mitigation for impacts of transportation projects.
Caltrans: Lambert Erosion	Mitigation for impacts of transportation projects.
Caulerpa Taxifola Eradication	To treat / eradicate current infestations of caulerpa taxifolia and prevent the potential for it to spread to new infestations or locations.
Caulerpa Taxifolia Eradication Program [4806]	The project consists of approval of an enhancement plan prepared by the Southern California Caulerpa Action Team (SCCAT) and authorization to disburse up to $1,300,000 to the Agua Hedionda Lagoon Foundation to continue emergency eradication of Calerpa taxifolia.
Caulerpa taxifolia Surveillance / Investigation	To survey the Newport Coast to identify presence or absence of the aquatic, invasive alga, caulerpa taxifolia.
Chino Hills SP, Coal Canyon Biological Corridor Restoration [6029-0304-4]	This project will improve the function of a major regional habitat linkage at Coal Canyon to increase the exchange of plants and animals between Chino Hills State Park and the Santa Ana Mountains. This action will help prevent local and regional species extinction. A habitat restoration plan will be developed and implemented. It will include landform restoration, re-vegetation, and project monitoring.

Project Title	Project Purpose
City of Seal Beach Open Space Opportunities [RMC03244]	This project will allow a thorough investigation of open space opportunities, interested partners, property owner information, and significance to regional trails, recreational opportunities, as well as habitat value. Additionally, this study will provide the city an opportunity to evaluate storm drain infrastructure and water quality improvement projects, and how they can be linked to open space and habitat improvement opportunities.
Coastal Sage Scrub & Grassland Restoration: Muddy Creek - Crystal Cove State Park (0452)	The removal of exotic weeds and plants to allow for revegetation with native vegetation.
Coastal Sage Scrub and Grassland Restoration / Los Trancos Area - Crystal Cove State Park (0451)	The removal of exotic weeds and plants to allow for the revegetation of native species.
Copper Emissions from Antifouling Paint on Recreational Vessels	The goal of this study was to assess the contributions of dissolved copper to receiving waters via antifouling coatings from recreational vessels. The objective was to measure these contributions in-situ to estimate flux rates under environmentally relevant conditions. The primary question addressed by this study is a comparison of dissolved copper flux rates for both passive leaching and hull cleaning activities. Three subquestions were also addressed in this study relevant to dissolved copper release rates from antifouling coatings. The first subquestion focused on quantifying the change in dissolved copper flux during passive leaching between cleaning events as biofilms, algae, and other encrusting organisms begin to grow on coated surfaces. The second subquestion focused on quantifying the effect of best management practices (BMPs) on hull cleaning activities. This is important since BMPs are a potentially important mechanism for controlling antifouling coating discharges. The third subquestion focused on evaluating the effect of different coating formulations. Differences among coating formulations may produce differential flux rates for copper during both passive leaching and underwater hull cleaning activities.
Coyoto And Carbon Creeks Watershed Management Plan Phase I [RMC03213]	Coyote and Carbon Creek Watershed Management Plan is a multi-objective, integrated and collaborative plan to maintain, restore and enhance a 155 square-mile watershed. The plan will examine water quality problems, habitat restoration, recreational improvements and storm water management and prioritize solutions.
Crystal Cove Coastal Sage Scrub Revegetation Project	To restore rare coastal sage scrub habitat and reduce or eliminate surface erosion. In addition the project will provide protection of sensitive archeological sites.

Project Title	Project Purpose
Crystal Cove SP, Emergency Sewer Repairs [6029-0203-DM6]	This project makdes emergency repairs to the sewer system at Crystal Cove SP.
Crystal Cove SP, Interim Management Repairs [6029-0203-DM7]	This project makes interim management repairs to the Historic District at Crystal Cove SP.
Crystal Cove SP, Rehabilitate Historic Cottages/Infrastructure [6029-0203-3]	This project will make improvements to significantly enhance the publics access to and the experience of the Historic District at Crystal Cove State Park. The project will make improvements to the sewer, water and electrical infrastructure, the access and circulation systems, preserve/restore/rehabilitate selected cottages and perform selected site work. Additionally, expanded natural and new cultural interpretation/ education features are proposed.
Crystal Cove State Park Coastal Sage Scrub Restoration	This project intends to restore habitat valuable to listed species.
Cynara cardunculus Control and Coastal Sage Scrub and Needlegrass Grassland Restoration at Audubon California's Starr Ranch Sanctuary	All upland restoration at Starr Ranch begins with non-chemical control of Cynara cardunculus (artichoke thistle). Artichoke thistle has invaded 700 acres of native and disturbed grassland habitat at the Ranch. In 1997 we initiated our first experiments to understand artichoke thistle biology and non-chemical control. By 2005, 340 of the 700 acres were reduced to 0 - 5% thistle cover and active restoration (to coastal sage scrub) or enhancement (of needlegrass grassland) was in progress in 55 acres. We add approximately 10 - 50 new acres per year for artichoke thistle control so that by 2010 we hope to have the weed under control in all acres targetted. Eventually 250 acres of sites in which shrubs are already colonizing will be restored to coastal sage scrub and 450 acres will be enhanced or left as needlegrass grassland.
Del Obispo Storm Drain Treatment And Low Flow Diversion Project [CBI # 43]	Decrease the bacterial loading entering San Juan and decrease beach postings at Doheny State Beach.
Detection, Control and Eradication of Caulerpa taxifolia	Although C. taxifolia is in the process of being eradicated in CA, the methods used in the present infestations were developed for protected areas having quiescent water. Since C. taxifolia is capable of establishing in high-energy coastal habitats, the objectives and goals of this project are:1. Develop better detection methodologies and approaches for coastal / near coastal areas; 2. Develop alternative containment and eradication methods for high-energy coastal/near coastal habitats 3. Develop a specific Rapid Response Implementation Plan for containment/eradications in high-energy habitats.

Project Title	Project Purpose
DFG Land Management Plans, South Coast Region [2002120]	An allocation to the Department of Fish and Game (DFG) for the preparation of five land management plans for various properties owned by the DFG in the South Coast Region. The properties are: Boden Canyon Ecological Reserve, San Felipe Valley Wildlife Area, Rancho Jamul Ecological Reserve, Hollenbeck Canyon Wildlife Area, all in San Diego County, and Upper Newport Bay Ecological Reserve in Orange County.
Doheny SB , Picnic Area Upgrades [6029-0304-AD11]	This project makes ADA improvements to picnic sites and campground.
Doheny SB, Comfort Station [6029-0304-AD10]	This project replaces a worn-out restroom building with an ADA compliant one.
Doheny SB, New Lifeguard Headquarters [6029-0304-6]	This project will construct a new lifeguard headquarters and lifeguard tower at Doheny State Beach. The lifeguard headquarters will include office space for lifeguards and lifeguard supervisors, first aid room, lifeguard tower, lifeguard locker room, conference room and a garage for lifeguard vehicles and personal watercraft used for rescue purposes. The new lifeguard headquarters will replace the existing facility and will aid in providing a safe environment at the beach.
Drainage Facility, Geographic Information System(GIS) Inventory, and Source Control Program	The purpose of the project is to assist the City of Santa Ana in developing a drainage facility inspection, GIS inventory, and source control program. Additional program components will be developed that will improve and build on the drain cleaning efforts to create a long-lasting program for identifying and treating pollutant sources.
East Anaheim Youth Center Gymnasium [C0207280_02-30-001]	Development of 11,700 + sq. ft. building, including 7,500 sq.ft. gymnasium. Other parts of project include offices, restrooms, storage, and utilities. Landscaping and parking lot work will be included.
East Anaheim Youth Center/Gymnasium [C0209845_RZ-30-030]	Development of 11,700 sf building area including a 7500 sf gym. The remaining interior will consist of office, restroom, storage and utility oriented spaces. Landscaping and parking site included. (See RZ-30-029.)
Evaluation of BMP Effectiveness	Little reliable information is available to evaluate the effectiveness of BMPs to reduce water quality impairments due to contaminants or other factors causing toxicity to aquatic life. The goal of this project is to assess the effectiveness of various types of BMPs to reduce the concentrations of toxics in urban runoff. The project was designed as collaboration with other agencies to enhance the monitoring of existing BMPs for both dry weather and storm runoff.

Project Title	Project Purpose
Exotic Grassland Species Control, Pilot Study [TBD546-00]	Pilot study - exotic grassland species control.
Fats, Oils and Grease Control Study - Phase II	- Determine the overall feasibility, practicality, effectiveness, and general capital and operating cost of promising fats, oils, and grease (FOG) control technologies (automatic grease traps, interceptor monitoring devices, and biological additives); - D
Frank R. Bowerman Landfill On-site Mitigation Area	Establish sycamores and oak trees to meet criteria.
Greenville Banning Channel Urban Runoff Diversion Project	To reduce the number of beach mile day postings at the Huntington Beach State Beach by reducing the amount of coliform bacteria in the urban runoff water that reaches the coastal water at the beach
Huntington SB, Expand Lifeguard Headquarters/Training Facility [6029-0304-5]	This project will expand, reconfigure and make necessary facility improvements to the existing Huntington State Beach Training Facility and Park Lifeguard Headquarters. The improvements to the facility will be accomplished by remodeling of the existing facility in conjunction with new construction additions throughout. The existing square footage will more than double from approximately 5,000 to about 14,000 square feet.
Laguna Beach And Laguna Main Beach Storm Drain Pollution Control Projects [CBI #86]	The proposed Projects include the construction of eight urban runoff diversion/separator units in high priority storm drain outlets that flow to the ocean. Urban runoff from these storm drains will be diverted to South Orange County Wastewater Authoritys sewer system. The designs include flow control valves that allow nuisance, non-storm runoff to be diverted to the sanitary sewer system year round. In addition, the designs include continuous deflection separator units for removing trash, sediment, organic matter and floatables that might clog the sanitary sewer line. The Projects are expected to improve coastal water quality, reduce the number of dry weather beach warnings and closures, and protect public health for a period of at least 20 years.
Laguna Beach And Laguna Main Beach Storm Drain Pollution Control Projects [CBI #87]	The proposed Projects include the construction of eight urban runoff diversion/separator units in high priority storm drain outlets that flow to the ocean. Urban runoff from these storm drains will be diverted to South Orange County Wastewater Authoritys sewer system. The designs include flow control valves that allow nuisance, non-storm runoff to be diverted to the sanitary sewer system year round. In addition, the designs include continuous deflection separator units for removing trash, sediment, organic matter and floatables that might clog the sanitary sewer line. The Projects are expected to improve coastal water quality, reduce the number of dry weather beach warnings and closures, and protect public health for a period of at least 20 years.

Project Title	Project Purpose
Laguna Lake Park [RMC03222]	The Laguna Lake Park Master Plan, Phase 2 Improvements propose to improve access, improve quality of habitat and open space, increase educational opportunities and improve accessibility of Laguna Lake open space resources to the Orange County regional trail system. Specific improvements include a new parking lot, outdoor classroom, restroom, picnic areas, fishing piers, ADA accessible walks and ramps, realignment of park trails, addition of retaining walls and new landscaping and irrigation. The project improves a public open space resource, promotes stewardship of landscape through interpretive educational kiosks, and provides enhance accessibility to the access to trails.
Laguna Laurel Ecological Preserve Weed Control (0541)	To control Artichoke Thistle, Cocklebur, Tree Tobacco, Mustard and Fennel in Laguna Laurel Ecological Reserve.
Los Angeles Volunteer Monitoring and Education (00-123-254-0)	To encourage and increase public involvement and to maximize data quality from citizens in volunteer monitoring programs. SCMI provided training, guidance, field consultations, and quality assurance sessions open to all of the region's volunteer monitoring organizations.To provide an illustrated field guide for sampling and analysis performed by volunteer monitors. This field guide was patterned after the proven model provided by the Heal the Bay Stream Team Field Guide. In addition to its obvious value to volunteer monitors, this Field Guide will be an educational resource made available to participating schoolteachers.To expand and coordinate seasonal water monitoring "snapshot" efforts. The existing volunteer monitoring effort within Region 4 was restructured and expanded in order to assess and report water quality on the same day in all the region's watersheds, which include: Los Angeles River watershed, San Gabriel River watershed, Dominguez Channel watershed, and Santa Monica Bay Watershed Management Area (WMA).To assist groups in data entry and transmittal, thereby assisting the Regional Board staff in their water quality assessment and TMDL efforts. All credible data collected by participating volunteer groups and the lead agency, in all of the local watersheds, was entered on a computer database and transmitted to the Regional Board via email monthly.To increase public awareness and stewardship of our water resources, thereby changing wasteful practices resulting in lower pollution levels over time.Recommendations for revisions to the Southern California Volunteer Monitoring Quality Assurance Project Plan (QAPP).
Lower Santa Ana Basin Salt Balance and Capacity	The 1975 and 1983 Basin Plans for the Santa Ana watershed both reported that the most serious problem in the basin was the build-up of dissolved minerals in the ground and surface waters. This plan describes salt management plans recommended for implementation.

Project Title	Project Purpose
Maintain Coastal Bluff Community - Follow Up Plantings [TBF180-00]	Additional fencing as part of a 94/95 NHS project helped to keep trespassers out of sensitive areas. More plantings are needed to fill in highly impacted areas. Site preparation, weeding, and planting is part of the plan.
Maintain Coastal Sage Scrub Community - Artichoke Thistle Control, Bowl Area, Phase II [TBF141-00]	Retreat artichoke thistle area to reduce cover to ~5%.
Maintain Coastal Sage Scrub Community - Artichoke Thistle Removal, Moro Canyon [TBF139-00]	Retreat artichoke thistle area to reduce cover to ~5%.
Mission Viejo Materials Incorporated Restoration	To mitigate for impact of sand and gravel extraction operation. To create 10 acres of coastal sage scrub and riparian habitat for the California gnatcatcher and least bells vireo.
Newport Bay Water Quality Model (0-147-180-0)	The objective of this project is to develop an interactive numerical model of Newport Bay.
Newport Bay Watershed (8-064-258)	The purpose of this project is to integrate several federal, state, regional and local programs to identify and prioritize water quality problems in the Newport Bay watershed. To develop implementation strategies to address those problems on a watershed basis, especially for "non-point" sources.
Olinda Historic Trail [RMC03207]	The Olinda Historic Trail Project will provide access to open space along Highway 142, between Carbon Canyon Regional Park and the Puente-Chino Hills Wildlife Corridor. The trail will originate at the Olinda Historic Museum and Park, a California State Historic Landmark, and climb 700 vertical feet through former oil company property into Orange County coastal range wilderness, south and east of Tonner Canyon. The need for a trail in the project area has been specifically identified in the City of Brea's Master Plan. Olinda Historic Trail project elements include the development of technical and design plans for a trail that would connect the site, an early twentieth-century oil town, with city-owned open space, Chino Hills State Park and additional local/regional trails. Additional planned improvements include the removal of invasive species, reintroduction of native plant materials, production of interpretive signage/brochures and the displaying of oil equipment associated with the historic use of the property.
Orange County Alligatorweed Project (0359)	To control and eradicate Alligatorweed from county.

Project Title	Project Purpose
Orange County Division Of League Of California Cities Open Space Opportunities [RMC03253]	The RMC has recommended 31 projects in Orange County for the Workprogram, however RMC lacks the personnel needed to discern potential projects and to identify priority projects for the region. This critical gap can be solved with the assistance of the OCD in identifying projects that enhance open space, habitat, low impact recreation, watershed improvements and environmental education.
Orange County Klamathweed Biological Control Project (0117)	Biological control of klamathweed a noxious weed of rangelands and right-of ways in Orange County.
Orange County Natural Communities Conservation Plan (NCCP)	The purpose of this project is to create a subregional multi-habitat-based habitat conservation plan that balances resource protection with reasonable economic growth.
Poche Beach Ultraviolet Light Bacteria Disinfection System	Poche Beach is listed every year by Heal the Bay and Surfrider as one of the top ten most bacteria polluted beaches in the State of California. The reason for this must be the 1,000,000 gallons per day of urban runoff containing very high levels of bacteria entering the beach at this location from a flood control channel which is concrete lined and mostly covered reinforced concrete box to the top of the urbanized watershed. The purpose of the project is to disinfect the urban runoff with ultraviolet light prior to the runoff entering the beach. The goal of the project was to reduce the number of time per year that the County Health Care Agency placed an advisory sign on the beach waring swimmers that the ocean water contains levels of bacteria in excess of what is considered safe.
Puente-Chino Hills Wildlife Corridor	Preservation of urban open space, conservation of regional biodiversity, and prevention of habitat fragmentation.
Regional Wetlands and Watershed Management Plan for Coastal Southern California	To facilitate watershed planning on a regional basis by allowing the 5 county-based task force of the Wetlands Recovery Project to participate in the process of developing the WRP's watershed management planning tools.
Rehabilitation Sewage Lift Station No. 13 [CBI #276]	Rehabilitate old lift station at Capistrano State Park on the beach. Sewage lift station #13 at Pacific Coast Highway.
Rehabilitation Sewage Lift Station No. 14 [CBI #277]	Rehabilitate lift station in order to avoide mechanical and electrical failure. This will prevent spills onto the beach. This lift station is right on the beach.
Rhine Channel Sediment Remediation Feasiblity Study	This project will seek to define the depths of sediment contamination of the Rhine Channel that will require remediation.

Project Title	Project Purpose
Salt Creek Storm Drain Treatment Project [CBI # 46]	The treatment facility will include an ozone treatment unit, an electrical equipment room, four basket strainers, and four horizontal sand strainers. The Project will also include a concrete berm (diversion weir) along the western edge of the existing concrete apron at the outlet of Salt Creek that will incorporate a four-foot wide by two-foot high slide gate and an inlet facility to direct flow to the pump station. The Project will capture up to 1,000 gallons per minute of urban runoff, treat it, and direct it back into the Salt Creek outlet. During storm events, this facility will be bypassed. The design of the Project will provide diversion capacity for 20 years from the date of initiation of construction.
San Diego Basin Water Quality Control Plan	The purpose of the plan is to: 1) designate beneficial uses of the Region's surface and ground waters; 2) designate water quality objectives for the reasonable protection of those uses; and 3) establish an implementation plan to achieve the objectives.
San Diego Bay Protection and Toxic Cleanup Program	The California State legislature established the Bay Protection and Toxic Cleanup Program. It requires regional toxic hot spot cleanup plans and a statewide consolidated toxic hot spot cleanup plan, intended to provide direction for the remediation and prevention of toxic hot spots.
San Diego Region Ambient Bioassessment Program for fiscal year 1999 - 2002 (9-159-190-0)	To evaluate the biological and physical integrity of targeted inland surface waters in the San Diego Region and provide support for Region 9's Citizen Ambient Monitoring program.
San Jacinto Basin Salt Balance and Assimilative Capacity	The 1975 and 1983 Basin Plans for the Santa Ana watershed both reported that the most serious problem in the basin was the build-up of dissolved minerals in the ground and surface waters. This plan describes salt management plans recommended for implementation.
San Juan Creek (UP STREAM) Mining Reclamation Project	This mining reclamation site has the following criteria: To provide visual screening of mined lands, restore the character and appearance of affected streambanks, and maintain opportunities for future extraction as the alluvium in the flood plain is replenished.
San Juan Creek Watershed Bacterial Study	Determine the source of bacterial contamination in San Juan Creek at Doheny Beach.
Santa Ana / San Jacinto Ground Water Nitrate Study (5-121-250)	The purpose of this project was to simulate the movement and fate of nitrates resulting from the application or use of wastewater effluent.
Santa Ana Mountains Fire Alliance	To coordinate the activities of agencies, organizations, businesses, landowners and citizens who are concerned with the social and ecosystem impacts of wildfire in or near the Santa Ana Mountains.

Project Title	Project Purpose
Santa Ana Optimization Model (8-174-250)	To revise the current practices of the Santa Ana Watershed Project Authority (SAWPA) in order to ensure a high quality water supply for the Upper Santa Ana Basin.
Santa Ana Region Aboveground Storage Tanks Program	The purpose of this program is to protect the public and the environment from the serious threat of millions of gallons of petroleum derived chemicals stored in thousands of aboveground storage tanks.
Santa Ana Region Bay Protection and Toxic Cleanup Program	The California Water Code requires that the State board and Regional Boards establish programs for the maximum protection of beneficial uses of bays and estuaries, focusing on water quality problems due to toxic substances.
Santa Ana Region Department of Defense Facilities Water Quality Program	Significant groundwater contamination has been detected at the six major Department of Defense Facilities in the Santa Ana region. The purpose is to investigate and cleanup the environmental problems at theses facilities.
Santa Ana Region Disposal of Hazardous Waste and Non-Hazardous Waste to Land Program	The purpose of this program is to properly manage the disposal of hazardous and non-hazardous waste so as to not diminish the beneficial uses of water in the region.
Santa Ana Region Groundwater Contamination From Volatile Organic Compounds Program	In 1984, legislators passed a bill requiring the California Department of Health Services to develop and implement a program to require the sampling of public drinking wells for volatile organic compounds. As a result of the indication of extensive organic compound contamination in the region, the State Water Board and Regional Water Board initiated the Well Investigation Program.
Santa Ana Region Leaking Underground Storage Tanks Program	This program addresses the fact that there are approximately 2,000 known cases of leading underground storage tanks in the Region.
Santa Ana Region Nonpoint Source Program	The State Water Quality Control Board adopted the Nonpoint Source Managment Plan n 1988, and it established a statewide policy for managing nonpoint source inputs to California's waters, and is included in the Santa Ana Region's Basin Plan.
Santa Ana Regional Interceptor - SARI	To transport non-reclaimable wastewater (high saline wastewater) from the Upper Santa Ana River Basin to the ocean for disposal, after treatment. To recover and protect water resources in the watershed. The first step is the completion of the SARI pipeline. The next step is to get customers into the SARI. At the same time, recovery of the contaminated basins requires pumping and desalting. The Chino Basin Desalination Program is the first step towards desalting groundwater as a beginning to recover the basin. The brine will be discharged to the SARI.

Project Title	Project Purpose
Santa Ana River - Nitrogen and Total Organic Carbon (1-082-250)	The objective of the project was too enhance the natural biochemical process responsible for the reduction of total inorganic nitrogen (TIN) and total organic carbon (TOC) from the Santa Ana River during its passage through the Prado Basin.
Santa Ana River - Sources and Sinks of Nitrogen (8-181-250)	To establish management practices that ensure that the water passing Prado dam is of suitable quality.
Santa Ana River Basin Water Quality Control Plan	The federal Clean Water Act and the California Porter-Cologne Water Quality Control Act require that the Regional Board adopt a water quality control plan to guide and coordinate the management of water quality in the Region. This plan was adopted in 1975, and numerous amendments are adopted to modify the specific Basin Plan water quality standards and policies to reflect current water quality conditions and priorities.
Santa Ana River Use Attainability Analysis	To establish the beneficial uses that can be attained in the Santa Ana River and recommend site-specific water quality objectives (SSO's) to protect those beneficial uses.
Santa Ana Watershed Volunteer Monitoring and Public Outreach (01-056-258-0)	To conduct community outreach and education to increase the awareness of the general sources of pollution and ways nonpoint source pollution can be prevented, and collect monitoring data to target nonpoint sources of pollution in urban runoff.
Santa Monica Bay Beach Valuation Study	Develop and utilize an economic model to estimate the value of beach recreation in Southeren California.
Seasonal Bacteria Study-Orange County	1). Contribute to the water quality parameter data base currently being compiled at Southern California Marine Institute (SCMI) and the Regional Water Quality Control Boards. 2). Train students, chapter interns, and volunteers in marine science and scientific methods. 3). Extend the results of this project to include the public (public outreach) and community outreach.

Project Title	Project Purpose
Sediments as a non-point source of nutrients to Upper Newport Bay, California	Upper Newport Bay (UNB) is the second largest estuarine embayment in southern California and provides critical natural habitat for terrestrial and aquatic species. Land use changes in the San Diego Creek watershed, the major source of freshwater to UNB, have lead to increased freshwater and nutrient loads. These nutrient loads are known to fuel the productivity of macroalgal communities in UNB. While these primary producers are important in estuarine nutrient cycling and food web dynamics, their excessive abundance can reduce the habitat quality of a system. Increased primary production can lead to depletion of O2 from the water column causing hypoxia (low O2) or anoxia (no O2), which can be extremely stressful to resident organisms. As a result of these excessive nutrient loads, the Santa Ana Regional Water Quality Control Board (SARWQCB) placed UNB on the federal 303(d) list of impaired water bodies. This 303(d) listing precipitated the development and adoption of a Total Maximum Daily Load (TMDL) for N and P for the Bay in 1998. The implementation phase of the nutrient TMDL has several elements, one of which calls for the evaluation of N and P water quality objectives (WQOs) to determine whether or not they are appropriate. Current WQOs are based on surface water inputs from the rest of the watershed and do not account for internal sources of nutrients to surface waters, such as sediments. This study attempted to address four major questions relevant to refining UNB WQOs: 1. What is the load of N and P associated with the wet-season input of sediments into the UNB? 2. What is the exchange of N and P between the surface waters and the sediment? 3. What are the major processes controlling this exchange? 4. What is the importance of sediment-derived nutrients to surface waters relative to other nonpoint inputs to UNB? To address these questions, the objectives of this study were to: 1. Investigate the seasonal and spatial patterns of bulk and pore water sediment N and P concentrations and macroalgal biomass in UNB; 2. Estimate wet-season and long-term average-annual sediment deposition rates and associated particulate N and P load to UNB; 3. Estimate ambient benthic nutrient exchange under a variety of environmental conditions observed in UNB over an annual cycle and integrate these rates to evaluate annual net nutrient exchange; 4. Investigate the major factors controlling sediment – surface water exchange of nutrients; and 5. Compare the magnitude and relative importance of sediment remobilization and exchange of nutrients with surface waters relative to other nutrient nonpoint sources to UNB.
Serrano and Quiet Oak Creek (DWR V70036)	Prevent further erosion and headcutting.

Project Title	Project Purpose
Sierra Recreation Center Renovations [C0207298_02-30-002]	A development project to include replacement of the exisiting building, improvements to pool, tennis courts, parking lot, the addition of a tot lot water play ground, and ADA access.
Sierra Recreation Center Renovations [C0209811_RZ-30-036]	A development project in the city of Mission Veijo to renovate the Sierra Recreation Center.
Siphon Reservoir Coastal Sage Scrub Revegetation Project	The goal of the restoration project is to produce self-sustaining coastal sage scrub habitat similar to existing coastal sage scrub habitat in the area.
Synthetic Turf Field Replacement [C0209019_RZ-30-035]	A development project to replace existing natural grass soccer field at Lower Crown Valley Community Park with an all-weather synthetic grass field.
The Park Rehabilitation Project [C0209983_RZ-19-077]	A development project in the City of La Habra Heights at "The Park" to include development of a new water trough for horses, new tot seats for swings, commercial roll-up door for shed, retrofit bleachers in horse arena, and electronic scoreboard, glas
Thistle Eradication / Aliso & Telegraph Canyons - Chino Hills State Park (0453)	To remove non-native plant species including artichoke thistle, Italian thistle, milk thistle, and fennel from Chino Hills State Park. The primary goal is to treat the remaining infestations of artichoke thistle and milk thistle, while completing initial treatments on Italian thistle and fennel.
Tonner Canyon Acquisition Project [RMC03201]	The ultimate goal of this project is to purchase 527 acres at the mouth of Tonner Canyon, east of SR-57 between the Puente and Chino Hills. This acquisition is a critical step in connecting the two ends of the Puente-Chino Hills Wildlife Corridor, whose 31-mile length connects the Whittier Hills with Chino Hills State Park and areas east and south. Of particular note is the fact that this property contains core habitat for sensitive and rare species, including the California Gnatcatcher, least Bells vireo, prairie falcon, and southwestern pond turtle, and secures the passage for wildlife movement under the freeway. It would also preserve Tonner Creek, a blue-line stream, along with meadows and forests. The project is part of a planned and partially constructed multi-use trail system that runs the entire length of the Puente-Chino Hills, and would be well suited for future low-impact recreational facilities, such as an interpretive center, picnic area, and campground.
Upper Newport Bay / San Diego Creek Watershed Nutrient Total Maximum Daily Load (8-064-258-0)	The objectives of this project are to develop a phased nutrient total maximum daily load (TMDL) specific to the San Diego Creek / Newport Bay Watershed, which will include the evaluation of, and possible revision to, the current nutrient water quality objectives established for the San Diego Creek in the Water Quality Control Plan for the Santa Ana Basin.

Project Title	Project Purpose
Upper Newport Bay / San Diego Creek Watershed Project	The Upper Newport Bay-San Diego Creek watershed is considered by the Santa Ana Regional Water Board to be a priority watershed management area in its jurisdiction. Beneficial uses include water contact recreation, warm freshwater habitat, wildlife habitat, marine habitat, areas supportive of rare species and shellfish, and areas of unique biologic significance. The Regional Board has identified four categories of water quality problems in Newport Bay-- sedimentation, bacterial contamination, eutrophication, and toxic contamination. To address these problems, the objectives of this study were to review existing water quality information relating to these problems, conduct an aquatic life toxicity assessment of tributaries to Newport Bay, support the formation of a watershed management structure, and to create and maintain a central repository of watershed information.
Upper Newport Bay Ecological Restoration Project [4505]	The Upper Newport Bay Ecosystem Restoration Project will address the impacts of habitat conversion resulting from sedimentation in the upper bay by dredging 2.1 million cubic yards of sediment and enhancing salt marsh habitats around the bay.
Upper Newport Bay Water Quality Enhancement Project (8-174-250-0)	To improve water quality of Upper Newport Bay and its tributaries.
Upper Newport Bay Watershed Water Quality Enhancement Project (8-023-258-0)	The goals of the project are: 1) To identify and reduce or eliminate sources of aquatic life toxicity in the watershed. 2) To identify and reduce or eliminate sources of excessive bioaccumulative chemicals in the watershed. 3) To contain and reduce or eliminate sources of excessive vegetative debris in the watershed. 4) To contain and reduce or eliminate sources of excessive urban trash in the watershed. 5) To develop educational tools related to the project that are broadly applicable to watersheds with similar impairments.
Urban Nutrient Best Management Practice Evaluation: Warner Channel Evaluation	1. Determine influent and discharge loadings for the nutrients nitrogen and phosphorus, total suspended solids (TSS), and selenium in urban area runoff due to passage through the wetland channel under a dry season low flow regime. Determine the nature (retention or release) and extent of the change for these parameters, and determine if differences in influent and discharge changes are statistically significant. 2. Attempt to relate observed changes in nutrient and selenium to either seasonal growth characteristics of channel vegetation or to channel physical/hydrologic characteristics of the channel such as length, representative flow rate, and hydraulic residence time. 3. Attempt to discern if there are changes in water volumes entering and leaving the channel. From selenium and specific conductance analyses, attempt to discern the extent to which channel base flow is sustained by groundwater infiltration. 4. Attempt to recommend BMP design changes that would be likely to improve treatment.

Project Title	Project Purpose
Urban Nutrient Source Characterization Study	1. Quantify nutrient loading of dry weather runoff from urban residential and business areas which drain to Upper Newport Bay, in order to confirm the appropriateness of urban nutrient loading assumptions incorporated into the Newport Bay Nutrient TMDL. Nutrient loadings were calculated from four urban drainage areas within the watershed, based on measured flow data and analysis of several 24-hour composite drainage samples. 2. Identify and characterize runoff quality of specific urban activities and sources which contribute to urban nutrient loading from each study area, in order to determine which, if any, source/activity category should be targeted for special management efforts. This was accomplished through “curbside” sampling of individual runoff events where it was observed flowing from residential and commercial properties into the public right-of-way. 3. Estimate to what extent urban runoff quality may be influenced or compromised by infiltration of shallow groundwater into the drainage network. This is potentially significant, given that major portions of the San Diego Creek watershed are characterized by shallow groundwater with high nitrate nitrogen concentrations. This will be accomplished through review of flow data as well as water quality comparison of curbside samples with composite samples.
Urban Runoff Nutrient Reduction Program (0-049-258-0)	This project has multiple goals and multiple partner agencies. This form describes the portion of the project funded by the Regional Water Quality Control Board. A nutrient TMDL that is currently under implementation in the Newport Bay watershed (Orange County). Nutrient laden urban runoff is one of the nonpoint sources which has been assigned a load allocation target. This project will help identify and test practices to achieve the TMDL target. The project will quantify the nonpoint source pollution benefits resulting from more efficient residential irrigation scheduling and more environmentally sensitive landscape maintenance cultural practices.
Urban Runoff Reduction Outreach Program	The purpose of the Urban Runoff Reduction Outreach Program is to reduce the volume of urban runoff and pollutant loadings in urban runoff from nonpoint sources in the City of Santa Ana through changes in public behavior.
USGS CA524 Santa Ana National Water Quality Assessment	To determine status and trends of water quality in the basin and evaluate potential causes of degradation.

Project Title	Project Purpose
USGS-SCAMP Southern California Areal Mapping Project	As a cooperative mapping project between the USGS and the California Division of Mines and Geology, the goals are to provide multi-purpose geologic map information for the population centers of southern California. The geologic information is presented on map sheets at several scales, covering 28 1:100,000 scale map sheets covering much of southern California. In response to recent El Nino events the landslide and debris flow maps have taken on immediate uses. Prediction of locations and likelihood of various hazardous conditions that may result from El Nino storms can be found on the internet at: http://geology.wr.usgs.gov/wgmt/elnino/
WetCAT Network	1. To bring dry-weather flow from the J03P02 subwatershed of Sulphur Creek in Laguna Niguel into compliance with the REC-2 fecal coliform objective of the Basin Plan of the San Diego Regional Water Quality Control Board, and into compliance with the REC-1 fecal coliform objective 60% of the time. 2. To provide improvements of 30 to 70% in the quality of J03P02 dry-weather flow in terms of turbidity, phosphates and nitrates, oils and greases, manganese, and total suspended solids. 3. To provide measurable attenuation of flow rates from the J03P02 subwatershed. 4. To provide increased and enhanced acreage of warmwater (WARM) and wildlife (WILD) habitat. 5. To demonstrate to other agencies and landowners in the region the feasibility and cost-effectiveness of retrofitting effective multipurpose and low-maintenance constructed water quality treatment wetlands into an existing suburban environment.
Woods End Access Entry [C0209038_RZ-30-040]	A development project in the city of Laguna Woods to develop a new park entrance.
Riverside County	
A Survey of Algal Toxins in the Salton Sea	To determine if and when algal toxins are present in the water and benthic invertebrates in the Salton Sea, by testing samples received from others investigating the sources of these toxins.
Aeneas Valley Ranch [3850-015]	Grant to nonprofit to acquire 505 total acres in the Santa Rosa and San Jacinto Mountains National Monument. Public benefit through protection of important scenic and biological resources values, including a portion of the Palm Canyon watershed. Prop 40 grant funded 175 acres worth of the project.
Ailanthus Tree Eradication - Chino Hills State Park (0454)	The eradication of the exotic Chinese Tree of Heaven from the Chino Hills State Park for the restoration of native oaks, willows and shrubs.

Project Title	Project Purpose
Alberhill Ca [2001152]	The allocation of a grant to the County of Riverside to assist in the acquisition of up to 9,422 acres of land in the Temescal Valley between the cities of Corona and Lake Elsinore to preserve a critical linkage between the Cleveland National Forest and existing reserves and for the permanent protection of diverse native plant and wildlife communities including a number of state and federally-listed threatened species.
Alberhill Conservation Area, Exp 1 [2003064]	An allocation for a block grant to the County of Riverside to assist in its purchase of one or more real properties, totaling up to 9,422 acres. Acquisition of the real property will preserve a regionally significant wildlife corridor and protect threatened and endangered wildlife, native plants and special habitats and further implement joint federal, state and local Natural Community Conservation Planning efforts in western Riverside County.
Alberhill Conservation Area, Expansion 2 [2004053]	The acceptance of a Habitat Conservation Plan (HCP) Land Acquisition Grant from the U.S. Fish and Wildlife Service (USFWS) in the amount of $952,425.00, with an agreement to Subgrant those funds to the County of Riverside to facilitate the acquisition of 113+ acres in the Alberhill Conservation Area, Riverside County. Acquisition of the real property will preserve a regionally-significant wildlife corridor and protect threatened and endangered wildlife, native plants and further implement joint federal, state and local Natural Community Conservation Planning (NCCP) efforts in western Riverside County.
Alessandro Arroyo (DWR #Z60136)	The purpose of this project is to restore, protect, and enhance the upper Alessandro Arroyo using volunteer labor, local landowner support, and local agency assistance.
Algal Toxins - Eared Grebes at the Salton Sea	Investigation of the cause of eared grebes mortality at the Salton Sea - algal blooms and biotoxins.
An Educational/Extension Program for Agricultural Pollution Control in the Salton Sea Watershed (0-8-094-257-0)	Pollution in agricultural drains in the Imperial Valley is a serious problem. Three main waterbodies in the area, the Alamo and New Rivers and the Salton Sea, are listed on the State's 303 (d) list of impaired waterbodies for various pollutants. The runoff from agricultural fields has been identified as the main source of these pollutants.
Arundo Control / Carbon & Telegraph Creeks - Chino Hills State Park (0455)	The removal of Arundo from riparian woodland areas, which is supplanting native willow trees.
Arundo Control in Hidden Valley Wildlife Area (0532)	To control Arundo within the Hidden Valley wildlife area by using two different herbicides and two different application methods.

Project Title	Project Purpose
Avian Botulism at the Salton Sea	To conduct a study to determine the ecology and management of Avian Botulism at the Salton Sea.
Avifauna of the Salton Sea: Annual Phenology, Numbers, and Distribution	To conduct studies to document the population sizes, seasonal abundance, and habitat associations of key groups of birds in the Salton Sea area.
Beauty Mountain	Support for the acquisition of 1,360 acres within the Beauty Mountain Wilderness Study Area in southwestern Riverside County.
California's Coastal NPS Control Implementation and Statewide NPS Program Coordination	The goals of this project are to: (1) enhance coordination of all partners involved in implementing actions identified in the Nonpoint Source (NPS) Program Plan; (2) support and promote collaboration amongst the Interagency Coordinating Committee (IACC); (3) support implementation of 61 identified management measures (MMs) by 2013, in part by co-leading and convening meetings for the IACC; (4) enhance CCC's local NPS outreach efforts by targeting resources on priority issues including local coastal program development and update; (5) support California's water quality agencies' efforts in implementing their storm water programs; (6) continue internal staff NPS oversight and training to ensure consistency in applying NPS measures; and (7) protect California's Critical Coastal Areas (CCAs) by developing site-specific action plans.
Caltrans: Hurkey Creek Bridge Replacement	Mitigation for impacts of transportation projects.
Caltrans: Love Valley Oak Mitigation	Mitigation for impacts of transportation projects.
Caltrans: Newport Widening (a)	Mitigation for impacts of transportation projects.
Caltrans: Newport Widening (b)	Mitigation for impacts of transportation projects.
Caltrans: Route 60 HOV Lanes	Mitigation for impacts of transportation projects.

Project Title	Project Purpose
Caltrans: Route 70 Elevate and Widen	Mitigation for impacts of transportation projects.
Caltrans: Route 71 Seismic Retrofit	Mitigation for impacts of transportation projects.
Caltrans: Route 86 Expressway Mitigation	Mitigation for impacts of transportation projects.
Cathton Property Acquisition	Support for the acquisition of 8,881 acres linking the Coachella Valley Fringe-toed Lizard Preserve and Joshua Tree National Park.
Coachella Valley / Salton Sea NPS Project (9-076-257-0)	The Salton Sea and its associated salt and freshwater marshes offers a rich wildlife and aquatic habitat in this desert area. The Coachella Valley Stormwater Channel (Whitewater River) and the Salton Sea are on the 1998 Clean Water Act (CWA) Section 303d list of impaired water bodies within the Colorado River Basin. The Coachella Valley Stormwater Channel conveys flow from wastewater plant discharge, agricultural drainage, and rainfall events to the Salton Sea. This makes bacterial contamination, selenium poisoning, nonpoint source pollution, and changes in salinity levels all serious threats to wildlife and recreation in the area. An integrated program of monitoring, sample collection and laboratory analysis, public information and education, groundwater protection, and fostering interagency cooperation will be used to address the environmental problems occuring in the area.
Coachella Valley Er, Exp 20 [2002174]	The acquisition of an expansion to the Coachella Valley Ecological Reserve, within the blow sand wind corridor, located easterly of the community of Thousand Palms, for the protection of blow sand dependent species.
Coachella Valley Er, Exp 25 [2003066]	The acquisition of an expansion to the Coachella Valley Ecological Reserve, within the blow sand wind corridor located easterly of the community of Thousand Palms in Riverside County, for the protection of blow sand dependent species.
Coachella Valley MSHCP / NCCP	To develop a multiple species habitat conservation plan and secure incidental take permits.
Coachella Valley National Wildlife Refuge - Salt Cedar Removal	To restore federally listed threatened Coachella Valley fringe-toed lizard habitat.

Project Title	Project Purpose
Colorado River Basin Watershed Management Initiative	Water pollution and water quality issues in the Colorado River Basin region are prioritzed according to threat to public health and aquatic life; public interest; and recreational, economic, and aesthetic importance. Activities will be centered on development of pollution control limits (TMDLs) and the protection of drinking water sources. This strategy is being developed as a part of the State Water Board's Strategic Plan.
Dairy Industry Educational Outreach (2-066-250-0)	This project is designed to inform the lay person, farmer, and professional of the NPS pollution problems associated with agriculture and the many methods that can be used to control water quality degredation.
Demonstration of Alternative Dairy Waste Management Practices (9-079-258-0)	The Inland Empire West RCD (District) is proposing to implement a program to establish two types of demonstration projects that feature alternative methods of treating and disposing of dairy waste.
Desert Pupfish at the Salton Sea	To conduct a survey of the endangered desert pupfish community.
Desert Tortoise & Bighorn Sheep Rehabilitation / Restoration Project: 5 sites	Restore habitat important for the federally listed Desert Tortoise and the Desert Bighhorn Sheep by closing and restoring roads in designated wilderness areas.
Dos Palmas Habitat Restoration / Enhancement	The purpose of the project is 3-fold: (1) provide refuge for endangered species, (2) provide public recreation & educational opportunities, and (3) manage the watershed on an ecosystem basis, provide for natural functioning of processes.
Eared Grebes at the Salton Sea	Identification and ecology of disease-causing agents for eared grebes.
Emerson Property [3850-028]	Grant to local nonprofit to acquire 40 acres in the Asbestos Mountain area of Santa Rosa and San Jacinto Mountains National Monument. Public benefit through protection of important scenic, biological and recreational resources.
Federal Highway Road Realignment Restoration Project (Cottonwood Canyon)	Restore area where old road was ripped out.
Fish Biology and Fisheries Ecology of the Salton Sea	The objective is to investigate the fish community composition, relative biomass, and fish population parameters (spawning, recruitment, growth and mortalities) and to examine the reproductive biology of all captured fish.

Project Title	Project Purpose
Fox Property [3850-017]	Grant to local agency (city) to acquire 94.64 acres in the Santa Rosa and San Jacinto Mountains National Monument, including habitat for bighorn sheep and potential for recreational trails. Public benefit through protection of important scenic and biological resources values.
Goose Flats	The purpose of this project is to reestablish native vegetation on a burned area.
Griffith Observatory [C0204011_CH-19-001]	Renovation and expansion of the Griffith Observatory to include, but not limited to, the domes and cupola, roof, exterior walls, steps, railings, interior walls, floors, ceilings, electrical, plumbing, and addition of exhibit space, auditorium, food servi
Gullotti Property [3850-018]	Grant to nonprofit to acquire 80 acres in the Indio Hills to protect the sand source and sand transport system for the sand dune ecosystem that supports endangered Coachella Valley fringe-toed lizard and other sensitive species. Public benefit through protection of important scenic and biological resources values.
Herkey Creek Trout Habitat Improvement	Decrease stream temperature; Increase shading; Increase stream bank stabilization/protection
Hidden Valley Wildlife Area Arundo Removal (0255)	Wetland enhancement.
Historic Ctr For Arch & Paleo [C0204007_CH-33-002]	Western Center
Hulda Crooks Park Playground Improvement [C0207386_02-36-005]	Install 2,750 square feet of rubberized play surface outside of the fall zone of the play equipment, and concrete sidewalk and curb.
Husodo Property [3850-026]	Grant to local nonprofit to acquire 40 acres in the Santa Rosa and San Jacinto Mountains National Monument. Public benefit through protection of important scenic and biological resources values.
Irrigation Water Management Lab	To maintain agricultural yields and quality while optimizing water use and reducing reliance on agrichemicals including pesticides and synthetic fertilizers. There are 10-12 Irrigation Water Management projects in California with similar goals.
Jack Rabbit Canyon Property Revegetation - Phase 1	The purpose of this project is to establish self-maintaining native vegetation in areas disturbed by mining.

Project Title	Project Purpose
Lake Elsinore and Canyon Lake Nutrient Source Assessment	#NAME?
Lake Elsinore Lake Management Project	The Lake Elsinore Lake Management Project is a phased construction program designed to allow the lake water level to be managed and to provide lake improvements.
Lake Mathews Multi-Species Habitat Conservation Plan / NCCP	The purposes of the Multiple Species Habitat Conservation Plan are to: 1) Establish a wildlife reserve and ongoing management program therefore, 2) to provide a basis for incidental take permits and pre-listing agreements under the Federal Endangered Species Act, and 3) provide a basis for take agreements under the California Endandered Species Act
Lake Perris SRA, Allesandro Island Vault Toilets [6029-0203-DM16]	This project replaces worn-out vault toilets on Allesandro Island at Lake Perris SRA.
Lake Perris SRA, Lake Perris Hike & Bike Trail [6029-0304-AD8]	This project makes trail modifications for access compliance.
Lake Perris SRA, Picnic Area And Campground Upgrades [6029-0304-AD7]	This project makes ADA improvements to picnic sites, parking, and campground.
Lake Perris SRA, Replace Lifeguard Headquarters [6029-0304-7]	This project will demolish the existing lifeguard headquarters at Lake Perris SRA and construct a replacement multi-purpose lifeguard facility. The 2,500 to 3,000 square foot building will include a lifeguard tower, a garage bay for lifeguard vehicles and equipment, a training/ conference room for the statewide reservoir lifeguard training program, office space for lifeguards and lifeguard supervisors, a first aid room, restroom, and two locker rooms with showers.
Lake Perris State Recreation Area Stephens Kangaroo Rat Monitoring	This project desires habitat improvement for Stephen's K-rat.
Lost Horse Mine Restoration Project	Mine reclamation.

Project Title	Project Purpose
Lower Colorado River Desert Region	1) Reduce salinity levels in the soil by installing subsurface tile drains and reduce soil compaction and soil stratification by slip plowing and growing cover crops. 2) Reduce the nitrate and pesticide levels in drain waters entering the Salton Sea with soil salinity management to reduce SAT and EC levels. This will improve sustainability of crop productivity and reduce sediment loading and salinity levels that are impairing surface water resources. 3) Reduce the amount of nitrates leached into the ground water through improved pest management, installed structures, irrigation water management, and education. 4) Reduce the amount of pesticides in runoff and drain water though improved pest management, installed structures, irrigation water management, and education activities. 5) Reduce PM-10 levels during the critical periods by implementing Reasonably Achieved Conservation Measures (RACM's) and Best Available Conservation Measures (BACM's) that have been approved by the Imperial-Coachella Air Pollution Control Districts.
McCoy Wash Flood Control	Palo Verde farmers have formed the McCoy Wash Flood Control District to sponsor a PL566 Watershed Project.
Middle Santa Ana River TMDL Phase I - Data Collection Effort Report	Beginning in February 2002, the Workgroup developed and implemented an extensive pathogen water quality monitoring program. Samples were collected by Regional Board staff and stakeholder agencies at 10-13 locations on weekly basis during nine 30-day sampling periods. These sampling periods occurred during February, March, July and September of 2002, January and March of 2003, and from January through mid-April 2004. Agencies participating in the monitoring program included San Bernardino County Flood Control District (SBCFCD), City of Riverside, Orange County Water District (OCWD), Inland Empire Utilities Agency (IEUA) and Chino Basin Watermaster (CBWM). Results of this program verified significant impairments to the identified water bodies and established the basis of the Regional Board TMDL report.
Miramontes Property [3850-025]	Grant to local nonprofit to acquire 10 acres in the Santa Rosa Mountains Wilderness within the Santa Rosa and San Jacinto Mountains National Monument, including habitat for endangered Peninsular bighorn sheep. Public benefit through protection of important scenic and biological resources values.
Mount San Jacinto SP, Picnic Area And Campground Upgrades [6029-0304-AD4]	This project makes ADA improvements to picnic sites and campground.

Project Title	Project Purpose
Murrieta Creek Flood Control, Environmental Restoration & Recreation [40722-03]	Acquisition of right-of-way easements and land as part of a $90 million project being undertaken by the U. S. Army Corps of Engineers and the cities of Murrieta and Temecula to create a multi-use greenbelt channel, including a 220-acre multi-use detention/sedimentation basin featuring 160 acres of rehabilitated and developed wetlands. The westerly bank will have trails to accommodate equestrians and the easterly bank will have trails to accommodate bicyclists and pedestrians.
New River Public Television Program (#02-153-257)	The New River is located in the southeastern portion of the Salton Sea Transboundary Watershed and is one of the main tributaries to the Salton Sea, California's largest inland surface water. The New River watershed is characterized by an arid environment and highly productive irrigated farmland. The New River transports partially treated and untreated wastewaters from Mexicali Valley across the International Boundary into the United States. It also receives disinfected and undisinfected domestic wastewater from sewage treatment plants in the Imperial Valley. Most of its flow, however, consists of agricultural return flows from the Imperial Valley. The New River is severely polluted by pathogens as indicated by high concentrations of fecal coliforms and Escherichia coli (E. coli) bacteria. These bacteria occur in the discharges from the Mexicali Valley in Mexico and in undisinfected water from the IMperial Valley wastewater treatment plants.
Northern and Eastern Colorado Desert Coordinated Ecosystem Management Plan	Recovery for Desert Tortoise, management of other plant & animal species of concern, greater sophisticated approaches to habitat management.
Nutrient Cycling in the Salton Sea	To improve our understanding of the role of the sediments in nutrient cycling within the Salton Sea.
Oak Valley [2003088]	An allocation of a grant to the Riverside Land Conservancy to assist in the cooperatively funded acquisition of 357 acres of land, located in the San Timoteo Canyon region of Riverside County, northwest of the junction of Interstate 10 and State Route 60, for the protection of wildlife habitat corridors, linkages and riparian zones.

Project Title	Project Purpose
Optimum Basin Management Program for Chino Basin - 205(j) Groundwater Monitoring Program	The Chino Basin 205(j) Groundwater Monitoring Program (CB205JMP) provides an evaluation of water levels and water quality in the groundwater of Chino Basin, a priority watershed in the Santa Ana Region. Approximately 200 wells located in the southern portion of the Chino Basin were sampled. The water quality data included general minerals, with a focus on TDS and nitrogen species. The collected water quality and water level data were used to develop detailed water quality and water level contour maps. The maps provide the necessary information to evaluate influent water quality to desalter well fields and facilities (using reverse osmosis technology), new recharge sites, and pumping patterns. The monitoring program is an integral component of the OBMP, a fully participative watershed-wide plan that is funded locally by approximately 40 water, wastewater, and pumping entities in the Chino Basin. The OBMP addresses critical water quality problems in localized portions of groundwater in Chino Basin.
Pistol Range Revegetation Experiment	To restore old pistol range within the park and to experiment on soils in which the plants are grown.
Prado Wetlands	To improve the quality of the Santa Ana River by removing nitrates. Also serves as a protective habitat for the endangered least Bell's vireo and Willow Flycatcher.
Puente-Chino Hills Wildlife Corridor	Preservation of urban open space, conservation of regional biodiversity, and prevention of habitat fragmentation.
Rare Herpetofauna Survey [TBD547-00]	Survey rare herpetofauna.
Reconnaissance of Biological Limnology Assessment at the Salton Sea	A 12 month intensive reconnaissance of key biological components of the Salton Sea ecosystem.
Reconnaissance of the Physical-Chemical Limnology of the Salton Sea	To develop a sampling program to assess the current chemical and physical conditions in the sea.
Riverside County Alligatorweed Project (0358)	To control and eradicate Alligatorweed from the county.
Riverside County Klamathweed Biological Control Project (0120)	Biological control of klamathweed a noxious weed of rangelands and right-of ways in Riverside County.

Project Title	Project Purpose
Riverside County Puncturevine Biological Control Project (0173)	Biological control of puncturevine, a noxious weed of rangelands and right-of-ways, in Riverside County.
Riverside County Yellow Starthistle Biological Control Project (0029)	Biological control of yellow starthistle, a noxious weed of rangelands and right-of-ways, in Riverside County.
Salton Sea Education Program (0-090-257-0)	This project fulfills a need for broadly distributed educational materials concerning the water quality problems of the Salton Sea Transboundary Watershed.
Salton Sea Management Project: Evaluation of Salinity and Elevation Management Alternatives	The general purpose of the management project is to stabilize the salinity and elevation of the Salton Sea at levels that maximize the economic, environmental, social, and cultural attributes of the region.
Salton Sea Restoration Planning	To develop long term restoration plans for the Salton Sea in conjunction with the Bureau of Reclamation.
San Diego Basin Water Quality Control Plan	The purpose of the plan is to: 1) designate beneficial uses of the Region's surface and ground waters; 2) designate water quality objectives for the reasonable protection of those uses; and 3) establish an implementation plan to achieve the objectives.
San Diego Bay Protection and Toxic Cleanup Program	The California State legislature established the Bay Protection and Toxic Cleanup Program. It requires regional toxic hot spot cleanup plans and a statewide consolidated toxic hot spot cleanup plan, intended to provide direction for the remediation and prevention of toxic hot spots.
San Diego Region Ambient Bioassessment Program for fiscal year 1999 - 2002 (9-159-190-0)	To evaluate the biological and physical integrity of targeted inland surface waters in the San Diego Region and provide support for Region 9's Citizen Ambient Monitoring program.
San Jacinto Basin RCD Arundo Removal	Eliminate Arundo Donax from Santa Ana Watershed.
San Jacinto Basin Salt Balance and Assimilative Capacity	The 1975 and 1983 Basin Plans for the Santa Ana watershed both reported that the most serious problem in the basin was the build-up of dissolved minerals in the ground and surface waters. This plan describes salt management plans recommended for implementation.

Project Title	Project Purpose
San Jacinto Mountain Communities Coordinated Resource Management Plan	To coordinate land management and planning activities between public agencies and private landowners and to evaluate and implement projects of mutual interest. This includes, but is not limited to land use planning, development standards, wildland-urban fuels reduction, public safety, information and education for the San Jacinto Mountain Communities Plan area.
San Jacinto Wa, Exp 26 (Potrero Canyon Unit) [2003026]	The acquisition of fee title to 8,552 acres, together with a conservation easement over 565 acres of privately-owned land as an expansion of the Department of Fish and Games San Jacinto Wildlife Area, located in western Riverside County, in order to preserve critical habitat, key open space and a wildlife corridor to maintain a permanent linkage between protected areas in the San Bernardino National Forest to the east, San Timoteo Canyon to the northwest, and San Jacinto Wildlife Area and Lake Perris State Park to the west.
San Timoteo Watershed Management Authority Urban Runoff Management Strategy	The purpose of this project was to characterize water quality changes that could occur in the San Timoteo Watershed as a result of projected changes in land use, to develop and apply modeling tools to analyze solutions, and to develop a comprehensive urban runoff management and recharge strategy to protect and enhance water quality. Short-term Goals: Characterize current and projected surface water quality and discharge within the San Timoteo Watershed. Develop analytical tools for future analyses. Long-term Goals: Develop an urban runoff management strategy to integrate stormwater management, water quality protection and enhancement, supplemental water recharge, water supply reliability and groundwater management strategies with flood control, public access and recreation management strategies.
Santa Ana Basin Water Quality	1) Install waste management practices on 40-50 dairies that meet local requirements for waste discharge. 2) Reduce Flooding from upstream urban sources on 2,000 acres. 3) Install pasture improvement practices on 500 acres. 4) Install water conservation practices on 1,000 acres.
Santa Ana Mountains Fire Alliance	To coordinate the activities of agencies, organizations, businesses, landowners and citizens who are concerned with the social and ecosystem impacts of wildfire in or near the Santa Ana Mountains.
Santa Ana Optimization Model (8-174-250)	To revise the current practices of the Santa Ana Watershed Project Authority (SAWPA) in order to ensure a high quality water supply for the Upper Santa Ana Basin.
Santa Ana Region Aboveground Storage Tanks Program	The purpose of this program is to protect the public and the environment from the serious threat of millions of gallons of petroleum derived chemicals stored in thousands of aboveground storage tanks.

Project Title	Project Purpose
Santa Ana Region Bay Protection and Toxic Cleanup Program	The California Water Code requires that the State board and Regional Boards establish programs for the maximum protection of beneficial uses of bays and estuaries, focusing on water quality problems due to toxic substances.
Santa Ana Region Department of Defense Facilities Water Quality Program	Significant groundwater contamination has been detected at the six major Department of Defense Facilities in the Santa Ana region. The purpose is to investigate and cleanup the environmental problems at theses facilities.
Santa Ana Region Disposal of Hazardous Waste and Non-Hazardous Waste to Land Program	The purpose of this program is to properly manage the disposal of hazardous and non-hazardous waste so as to not diminish the beneficial uses of water in the region.
Santa Ana Region Groundwater Contamination From Volatile Organic Compounds Program	In 1984, legislators passed a bill requiring the California Department of Health Services to develop and implement a program to require the sampling of public drinking wells for volatile organic compounds. As a result of the indication of extensive organic compound contamination in the region, the State Water Board and Regional Water Board initiated the Well Investigation Program.
Santa Ana Region Leaking Underground Storage Tanks Program	This program addresses the fact that there are approximately 2,000 known cases of leading underground storage tanks in the Region.
Santa Ana Region Nonpoint Source Program	The State Water Quality Control Board adopted the Nonpoint Source Managment Plan n 1988, and it established a statewide policy for managing nonpoint source inputs to California's waters, and is included in the Santa Ana Region's Basin Plan.
Santa Ana Regional Interceptor - SARI	To transport non-reclaimable wastewater (high saline wastewater) from the Upper Santa Ana River Basin to the ocean for disposal, after treatment. To recover and protect water resources in the watershed. The first step is the completion of the SARI pipeline. The next step is to get customers into the SARI. At the same time, recovery of the contaminated basins requires pumping and desalting. The Chino Basin Desalination Program is the first step towards desalting groundwater as a beginning to recover the basin. The brine will be discharged to the SARI.
Santa Ana River - Nitrogen and Total Organic Carbon (1-082-250)	The objective of the project was too enhance the natural biochemical process responsible for the reduction of total inorganic nitrogen (TIN) and total organic carbon (TOC) from the Santa Ana River during its passage through the Prado Basin.
Santa Ana River - Sources and Sinks of Nitrogen (8-181-250)	To establish management practices that ensure that the water passing Prado dam is of suitable quality.

Project Title	Project Purpose
Santa Ana River Basin Water Quality Control Plan	The federal Clean Water Act and the California Porter-Cologne Water Quality Control Act require that the Regional Board adopt a water quality control plan to guide and coordinate the management of water quality in the Region. This plan was adopted in 1975, and numerous amendments are adopted to modify the specific Basin Plan water quality standards and policies to reflect current water quality conditions and priorities.
Santa Ana River Use Attainability Analysis	To establish the beneficial uses that can be attained in the Santa Ana River and recommend site-specific water quality objectives (SSO's) to protect those beneficial uses.
Santa Ana River Water Quality Objectives for Ammonia (5-197-180)	As of the date of this study, a substantial disparity existed between the EPA criteria and the Santa Ana Regional Water Board's objective for un-ionized ammonia (UIA) contained in the region's water quality control plan. In order to resolve this discrepancy, the regional board undertook an in-depth study to examine the actual UIA levels in the river to determine if UIA was causing deleterious effects to the aquatic life and, if appropriate, to establish a new UIA objective for reaches 2 and 3 of the Santa Ana River.
Santa Ana Watershed Volunteer Monitoring and Public Outreach (01-056-258-0)	To conduct community outreach and education to increase the awareness of the general sources of pollution and ways nonpoint source pollution can be prevented, and collect monitoring data to target nonpoint sources of pollution in urban runoff.

Project Title	Project Purpose
Santa Margarita Home to Ocean - A Citizen's Water Quality Monitoring Program	The Santa Margarita watershed has been experiencing increased urbanization and agricultural operations, causing serious impacts on this priority river and its ecosystem. Currently, there is not an organized effort to collect and analyze water quality data by a community organization in the entire watershed. In order to fill this gap, the Mission Resource Conservation District, under contract with the State Water Resources Control Board, intended to develop a citizen-based water quality-monitoring program called the Santa Margarita River Home2Ocean Citizen Water Quality Monitoring Program (Home2Ocean Program). The goals of the Home2Ocean Program are to implement a citizen-based volunteer water quality monitoring program and to increase public awareness of Santa Margarita River watershed issues through the following activities: 1) develop a citizen-based water quality monitoring program; 2) solicit and train volunteers to carry out 14 months of water sampling and four bioassessment procedures to monitor the physical habitat and biological conditions of significant tributaries of the Santa Margarita River; 3) use the monitoring program and the information it generates to educate the general public about the current state of the watershed; and 4) assess watershed awareness of targeted groups through the implementation of a watershed questionnaire before and after outreach efforts. The participants of the Home2Ocean Program are Riverside County Flood Control, San Diego State University (SDSU), the County of San Diego, San Diego Stream Team, and citizen volunteers.
Santa Margarita River Exotics Control Program	The purpose is to return natural riparian community function to the Santa Margarita Watershed by eliminating giant reed and salt cedar.
Santa Margarita River Watershed Management Plan	The project's purpose is to prepare a watershed management plan for the Santa Margarita River Watershed. The Plan will provide information for the development of tools for information management, public education, research management, and habitat and corridor assessment.
Santa Rosa Plateau ER, Exp 4 [2003060]	Part of a combined acquisition of 3,534 acres of land in fee, including assignment of a 170 acre conservation easement, and the conditional acceptance of an additional 165 acres in fee, all as additions to the Department of Fish and Games Santa Rosa Plateau Ecological Reserve located westerly of the city of Temecula in Riverside County.
Sarzotti Park Improvements [C0207563_02-56-003]	Phase 1 of the development of Central Park includes the construction of a 50,000 sq ft. Senior/Community Center and 10-20 acres of park and open space.
Sediment Contaminants at the Salton Sea	The sediment contaminant study willl identify contaminant concentrations present in the bottom sediment of the Salton Sea.

Project Title	Project Purpose
Sky Valley Ecological Reserve [2003317]	A grant to The Nature Conservancy (TNC) to assist in the acquisition of approximately 8,881 acres of vacant land as a cooperative project with the Department of Fish and Game, Bureau of Land Management, Coachella Valley Mountains Conservancy, Friends of the Desert Mountains, Resources Legacy Foundation Fund, Coachella Valley Associated Governments and City of Palm Desert for the protection of desert habitat located north of Palm Desert and easterly of Desert Hot Springs.
Southwestern Riverside County Multi-Species Habitat Conservation Plan	Establishment and ongoing management of a 9,000 acre reserve for conservation of 31 species and habitats upon which they depend.
Springcrest Property [3850-024]	Grant to local nonprofit to acquire 5.89 acres in the Springcrest area of the Santa Rosa and San Jacinto Mountains National Monument. Public benefit through protection of important scenic and biological resources values, including maintaining the scenic quality along Highway 74. Includes pinyon-juniper woodland habitat for gray vireo
Stephens Kangaroo Rat Habitat Conservation Plan	Implement a regional habitat conservation program for the federally endangered and state theatened Stephens' Kangaroo Rat in order to mitigate for incidental take authorized under permits issued by US Fish And Wildlife Service and California Department of Fish And Game.
Survey of Selected Microbial Pathogens in the Salton Sea	To determine the presence and distribution of significant pathogens in the Salton Sea.
Tamarisk And Arundo Control [TBD101-00]	Remove tamarisk and arundo from riparian areas.
Tamarisk Control in Joshua Tree National Park (0383)	To eradicate tamarisk in Joshua Tree National Park.
Thistle Eradication / Aliso & Telegraph Canyons - Chino Hills State Park (0453)	To remove non-native plant species including artichoke thistle, Italian thistle, milk thistle, and fennel from Chino Hills State Park. The primary goal is to treat the remaining infestations of artichoke thistle and milk thistle, while completing initial treatments on Italian thistle and fennel.
Tilapia Feeding Ecology / Avian Botulism at the Salton Sea	The role of tilapia feeding ecology in the epizootiology of avian botulism in the Salton Sea.

Project Title	Project Purpose
Torres Martinez Nutrient Monitoring Program	The Salton Sea is a critical water body with serious water quality problems that impair the Sea's beneficial uses and harm wildlife. The Salton Sea is one body of water within the Salton Sea Transboundary Watersheds, which has been designated as a Category I (Impaired) Priority Watershed by the California Unified Watershed Assessment. There are many widely held misconceptions about the ecological forces at work in the Sea. One of these is that the Sea was a mistake and should be left on its own to evaporate. The reality is much more complicated that this, particularly when the effects that the Sea's polluted waters have numerous dependent water birds and fish which need to be considered. Additionally, sediments with pollutants that will volitalize into the air as the sea dries will be harmful to human health and will increase air quality problems within a region that is already in non attainment for air quality standards. The Torres Martinez Tribe has 10,000 acres of land located under the Salton Sea at present. Our goal is to keep as much water on the land as is possible to keep the sediments from volitalizing and to try to attempt to make it a water body where fishable and possibly swimmable is again a viable option.
U.S. Bureau of Mines & Joshua Tree NP Revegetation Study	Mine reclamation
Upper Aliso Canyon Trail Rehabilitation [3]	Rehabilitate and upgrade an existing multi-use trail near a popular destination point within Chino Hills State Park
Upper Santa Ana Basin Salt Balance and Assimilative Capacity	The 1975 and 1983 Basin Plans for the Santa Ana watershed both reported that the most serious problem in the basin was the build-up of dissolved minerals in the ground and surface waters, and these plans, along with the 1995 Basin Plan describe salt management plans recommended for implementation.
USGS CA524 Santa Ana National Water Quality Assessment	To determine status and trends of water quality in the basin and evaluate potential causes of degradation.
USGS-SCAMP Southern California Areal Mapping Project	As a cooperative mapping project between the USGS and the California Division of Mines and Geology, the goals are to provide multi-purpose geologic map information for the population centers of southern California. The geologic information is presented on map sheets at several scales, covering 28 1:100,000 scale map sheets covering much of southern California. In response to recent El Nino events the landslide and debris flow maps have taken on immediate uses. Prediction of locations and likelihood of various hazardous conditions that may result from El Nino storms can be found on the internet at: http://geology.wr.usgs.gov/wgmt/elnino/

Project Title	Project Purpose
Warm Springs Creek Project: Erosion Control, Wildlife and Other Issues (4-099-259-0)	To develop and implement an ordinance to require on-site retention of waters that would represent additional flows resulting from development of lands, with the purpose of improving water quality and reducing erosion and sedimentation; a secondary purpose to protect the wildlife habitat and corridor amenities emerged with the Project development.
Water Education Center [C0204008_CH-33-001]	Design and construction of a water education center.
West Mojave Coordinated Management Plan	To define land management and land use strategies for the western region of the Mojave Desert that will: 1) Provide for the protection of natural ecosystems in appropriate areas, within the context of biodiversity, so that viable populations of plant and animal species can be maintained and future listings of species as threatened or endangered can be minimized. 2. Provide for the conservation and recovery of State and Federally listed and candidate plant and animal species as wild populations in their natural habitat in a manner that will maintain long-term population viability and genetic diversity. 3. Provide for appropriate resource uses and community expansion while, with a regional context, enhancing the long-term viability of plant and animal species and the ecosystems upon which they depend. 4. Provide for the streamlining of procedures.
Western Riverside County Multiple Species Habitat Conservation Plan	To develop a long-term habitat conservation plan(HCP) which will conserve threatened and endangered species and their habitats in Western Riverside County. Phase I consists of project initiation, data collection, field sampling, and GIS preparation and analysis.
Whitewater River Revegetation Project	This project intends to reestablish native riparian vegetation.
Whitman Property [3850-027]	Grant to local nonprofit to acquire 311 acres in the Pinyon Flat area of Santa Rosa and San Jacinto Mountains National Monument. Public benefit through protection of important scenic, biological and recreational resources values.
Wildlife Disease Program at the Salton Sea	The primary purpose is to monitor the presence of wildlife disease at the Sonny Bono Salton Sea National Wildlife Refuge, to allow for early detection and rapid response to disease problems to minimize bird mortalities.
Willow Glen Basin Non-point Source Nitrate Program (7-085-259-0)	The goal of this project is to measurably improve the water quality in the lower reaches of Rainbow Creek and to actively involve the community in understanding and implementing the measures necessary in achieving this goal.

Project Title	Project Purpose
Wilson Creek Riparian Corridor [2003063]	An allocation for a grant to Riverside County to assist in the acquisition of 884 acres to establish and protect a contiguous landscape linkage, habitat nodes for wildlife dispersal and wildlife connectivity between the Cleveland National Forest and the San Bernardino National Forest located in southwestern Riverside County.
San Bernardino County	
Adit Canyon Tamarisk Removal	Eradication of tamarisk in isolated desert springs.
Afton Canyon	Eradication of non-native, invasive salt cedar. Salt cedar is a heavy water user which does little towards wildlife enhancement. It also inhibits natives from establishing.
Ahakhav Tribal Preserve	To develop a 1,000 acre multiple - purpose preserve on tribal lands, including wildlife and fish habitat.
Ailanthus Tree Eradication - Chino Hills State Park (0454)	The eradication of the exotic Chinese Tree of Heaven from the Chino Hills State Park for the restoration of native oaks, willows and shrubs.
Amboy Crater Recreation Facility	Amboy Crater was designated in 1973 as a National Natural Landmark (NNL) in recognition of its visual and geologic significance. The purpose of this project is to present how these resources can best be managed and protected while also enhancing the visitor's experience through improved access, facility construction and education/ interpretation.
Aquatic Center [C0207388_02-36-012]	Replaster community pool. Replace & retrofit existing deck & drain system, provide new cool deck surface. Install updated chlorination and filtration equipment.
Arroyo Toad Survey [TBD550-00]	Survey Arroyo toad.
Arundo Control [TBD434-00]	Continue removal of invasive, exotic arundo plant from riparian areas in the Santa Ana River and Carbon Creek, and restore native vegetation.
Arundo Control / Carbon & Telegraph Creeks - Chino Hills State Park (0455)	The removal of Arundo from riparian woodland areas, which is supplanting native willow trees.

Project Title	Project Purpose
Big Bear Lake / Rathbun Creek Sedimentation and Nutrient Control Project	Improve the water quality in Big Bear Lake by reducing sedimentation and nutrients entering the lake. Sand Canyon Creek, a tributary to Rathbun Creek, will be further restored by implementing erosion control measures.
Big Bear Lake GIS Storm Water Mapping to Implement Master Drainage Management Plan - 03-079-558-0	Project Purpose – Problem: The continuing decline in the overall environmental quality poses a serious threat to the watershed's existence. Without an environmental restoration program, including best management practices, the following problems will continue to be a serious concern to residents and visitors alike: • Continued degradation of the lake ecosystem, including loss of endangered species habitat • Continued erosion and sediment from tributaries • Increase in phosphorus and nutrient levels in the lake • Local flooding from lake surcharge • Local economic impacts as the area is highly recreation oriented Project Goals: The purpose of the study is to support the planning necessary to implement an adequate stormwater control program by developing GIS mapping data for the watershed. This grant will be used to prepare digitized aerial and parcel base mapping for the watershed of Big Bear Lake which is part of a multi-million dollar environmental restoration and remediation project for the Big Bear watershed area. The project is designed to comply with the U.S. Environmental Protection Agency's requirements for TMDL. (The TMDL establishes the maximum daily load of a pollutant that can enter the listed water body without violation of water quality standards.)
Bonanza Springs	Eradication of tamarisk in isolated desert springs.
Cactus Flat Borrow Pit	To stabilize the soils/material of this 5 acre pit and restore wildlife habitat; to improve visuals at this wilderness entry point. Develop successful mining revegetation methods.
Cactus Flat Revegetation Project	To revegetate illegal OHV trails off the main road, and protect undisturbed vegetation from OHV damage.

Project Title	Project Purpose
California's Coastal NPS Control Implementation and Statewide NPS Program Coordination	The goals of this project are to: (1) enhance coordination of all partners involved in implementing actions identified in the Nonpoint Source (NPS) Program Plan; (2) support and promote collaboration amongst the Interagency Coordinating Committee (IACC); (3) support implementation of 61 identified management measures (MMs) by 2013, in part by co-leading and convening meetings for the IACC; (4) enhance CCC's local NPS outreach efforts by targeting resources on priority issues including local coastal program development and update; (5) support California's water quality agencies' efforts in implementing their storm water programs; (6) continue internal staff NPS oversight and training to ensure consistency in applying NPS measures; and (7) protect California's Critical Coastal Areas (CCAs) by developing site-specific action plans.
Calquist/Frandsen CFIP [8CA03354]	Site preparation, tree planting, erosion control and watercourse protection in area burned by Old Fire in 2003.
Caltrans: Euclid Avenue Rehabilitation (a)	Mitigation for impacts of transportation projects.
Caltrans: Euclid Avenue Rehabilitation (b)	Mitigation for impacts of transportation projects.
Caltrans: Four-lane Divided Highway	Mitigation for impacts of transportation projects.
Caltrans: Freeway Construction in San Bernadino	Mitigation for impacts of transportation projects.
Caltrans: Hathaway Creek Bridge Replacement	Mitigation for impacts of transportation projects.
Caltrans: I-395 Passing Lanes	Mitigation for impacts of transportation projects.
Caltrans: Metcalf Creek Fish Ladder	Mitigation for impacts of transportation projects.

Project Title	Project Purpose
Caltrans: Monterey Avenue I/C Replacement	Mitigation for impacts of transportation projects.
Caltrans: Roadway Widening	Mitigation for impacts of transportation projects.
Caltrans: Route 15 Seismic Retrofit	Mitigation for impacts of transportation projects.
Caltrans: Route 18 Seismic Retrofit	Mitigation for impacts of transportation projects.
Caltrans: Route 30 / 330 Freeway	Mitigation for impacts of transportation projects.
Caltrans: Route 30 Oak Summit Mitigation Bank	Mitigation for impacts of transportation projects.
Caltrans: Route 58 / 15 Freeway	Mitigation for impacts of transportation projects.
Caltrans: Santa Ana River Bridge Seismic Retrofit	Mitigation for impacts of transportation projects.
Carl Moyer Program For Antelope Valley AQMD [CMP-1]	Carl Moyer Program for Antelope Valley Air Quality Management District
Carl Moyer Program For Antelope Valley AQMD [CMP-31]	Carl Moyer Program for Antelope Valley Air Quality Management District
Carl Moyer Program For Mojave Dessert AQMD [CMP-11]	Carl Moyer Program for Mojave Dessert Air Quality Management District
Carl Moyer Program For Mojave Dessert AQMD [CMP-33]	Carl Moyer Program for Mojave Dessert Air Quality Management District

Project Title	Project Purpose
Castle Mountain Mine Revegetation Project	Restoration of highly disturbed site.
Central Park Dev. - Phase I [C0205005_SG-36-001]	Development of Central Park includes construction of 50,000 sq ft Senior/Community Center, and approx 10-20 acres fo park and open space.
Central Park Senior/Community Center Project [C0209934_RZ-36-016]	Phase I of the development of the Central Park includes the construction of a 50,000 sq foot Senior?community Center and 10-20 acres of park and open space
Chino Hills SP, Coal Canyon Biological Corridor Restoration [6029-0304-4]	This project will improve the function of a major regional habitat linkage at Coal Canyon to increase the exchange of plants and animals between Chino Hills State Park and the Santa Ana Mountains. This action will help prevent local and regional species extinction. A habitat restoration plan will be developed and implemented. It will include landform restoration, re-vegetation, and project monitoring.
Chino Hills SP, Entrance Road And Facilities [6029-0304-3]	The project will improve service to the public and allow formal access to Chino Hills State Park by providing a new entrance road and associated infrastructure. The project will include development of approximately 2 miles of a safe all weather entrance road, retaining walls, road drainage facilities, a park entrance station, utilities, a scenic overlook, erosion control, a multi-use path, a maintenance facility, comfort station, trailhead and intersection improvements.
Christmas Spring Exclosure	Increase riparian vegetative cover, both woody trees and non-woody species to benefit nesting and migrants.
Civic Center Park - Amphitheatre [C0209032_RZ-36-017]	A development project in the Town of Apple Valley to construct an amphitheatre stage, parking lot, lighting, turf and irrigation.
Civic Center Park Amphitheater [C0207397_02-36-006]	A development project in the town of Apple Valley to include an Amphitheatre stage, parking, irrigation, turf and lighting.
Colorado River Basin Watershed Management Initiative	Water pollution and water quality issues in the Colorado River Basin region are prioritzed according to threat to public health and aquatic life; public interest; and recreational, economic, and aesthetic importance. Activities will be centered on development of pollution control limits (TMDLs) and the protection of drinking water sources. This strategy is being developed as a part of the State Water Board's Strategic Plan.

Project Title	Project Purpose
Crestview Seep Tamarisk Removal	Eradication of tamarisk in isolated desert springs.
Dairy Industry Educational Outreach (2-066-250-0)	This project is designed to inform the lay person, farmer, and professional of the NPS pollution problems associated with agriculture and the many methods that can be used to control water quality degredation.
Dairy Washwater Treatment Demonstration Project (0-036-258-0)	To demonstrate the use of wetlands treatment technology for reducing the effect of dairy wastewater on water resources.
Death Valley National Park - Tamarisk Control (0567)	To remove a noxious weed, tamarisk, that is damaging riparian areas.
Deep Creek Trout Habitat Improvement	Increase shading; Increase stream bank stabilization/protection
Demonstration of Alternative Dairy Waste Management Practices (9-079-258-0)	The Inland Empire West RCD (District) is proposing to implement a program to establish two types of demonstration projects that feature alternative methods of treating and disposing of dairy waste.
Desert Tortoise & Bighorn Sheep Rehabilitation / Restoration Project: 5 sites	Restore habitat important for the federally listed Desert Tortoise and the Desert Bighhorn Sheep by closing and restoring roads in designated wilderness areas.
Devil Fire Rehabilitation	Stabilize soils, return native vegetation, restore wildlife habitat, especially for turkeys and quail, protect sensitive riparian and meadow resources from vehicular traffic and erosion.
Eagle Feather Canyon North Springs Tamarisk Removal	Eradication of tamarisk in isolated desert springs.
Eagle Feather Wash Tamarisk Removal	Eradication of tamarisk in isolated desert springs.
Emergency Watershed Protection Morongo Indian Reservation	The purpose of this project is to design and construct debris basins for sediment control.

Project Title	Project Purpose
Exotic Grassland Species Control, Pilot Study [TBD546-00]	Pilot study - exotic grassland species control.
Fawley CFIP [8CA03356]	Site preparation, tree planting, erosion control and watercourse protection in area burned by Old Fire in 2003.
Federal Highway Road Realignment Restoration Project (Cottonwood Canyon)	Restore area where old road was ripped out.
Fort Irwin Land Rehabilitation and Maintenance	To promote the sustainability of army training lands, to reduce the amount of wind and water erosion and to minimize health and safety risks at the National Training Center.
Gordon Quarry Restoration	The purpose of this project is to restore diversity of native vegetation to site and natural landscape; stabilize soil surface to prevent erosion; develop methods for successful revegetation of mined sites.
Granite Springs Tamarisk Removal	Eradication of tamarisk in isolated desert springs.
Grove Avenue Detention Basin Project (9-045-258-1)	Project Goals include: 1) increase the recharge of low salinity runoff from winter rains to improve the quality of groundwater in Chino Basin, and 2) reduce the amount of concentrated surface water pollution from overflow of dairy waste containment facilities to downstream refuges and the Santa Ana River.
Harper Lake Marsh	Riparian restoration and watchable wildlife.
Hazardous Waste Small Quantities Management Study (3-113-225)	The purpose of the project was to assess the activities and expenditures of the household hazardous waste collection program established in San Bernardino County, California.
Hesperia Community Park Softball/Baseball Complex [C0207402_02-36-011]	Development of softball/ baseball complex along with necessary infastructures.
Hesperia Community Park Softball/Baseball Complex [C0209931_RZ-36-019]	A development project in the Hesperia RPD to construct four softball/baseball fields

Project Title	Project Purpose
High Desert Stormwater Phase II Awareness Impact Project	The purpose of the project was to develop an education and outreach program to encourage citizens to implement practices that reduce the impacts of stormwater runoff on water quality in the High Desert.
Hilltop Renewal Center CFIP [8CA03353]	Site preparation, tree planting, erosion control, and habitat and water quality protection in area burned by Old Fire in 2003.
Hulda Crooks Park Playground Improvement [C0207386_02-36-005]	Install 2,750 square feet of rubberized play surface outside of the fall zone of the play equipment, and concrete sidewalk and curb.
Ivanpah Dry Lake Exclosure	The project would benefit non-motorized recreation and research activities.
Jack Bulik Park Phase II [C0207383_02-36-009]	A development project in the the City of Fontana for two little league/softball fields; one senior field, restroom building, parking lot, park furniture, security, lighting, picnic areas; landscaping, trails, and support facilities.
Jack Bulik Park Phase II [C0209867_RZ-36-020]	JACK BULIK PARK PHASE II
Lake Havasu Warmwater Fish Habitat Restoration	Improve refuge cover; Improve spawning habitat
Lemon Basin	To control a sudden increase in sedimentation occurring after a fire or intense rain storm. Prevent continued headcut advancing toward homes and public utilities.
Lost Horse Mine Restoration Project	Mine reclamation.
Low Water Crossings on Deep Creek Wild Trout Tributaries	Decrease erosion/stream sedimentation
LRAM Fort Irwin	To promote the sustainability of army training lands, to reduce the amount of wind and water erosion and to minimize health and safety risks at the National Training Center.

Project Title	Project Purpose
Machris Park [C0207398_02-36-007]	Constructing safety and accessibility improvements to a 29 space parking lot at Machris Park.
Maintenance Yard Roof At Fogelson Park [C0207399_02-36-010]	Remove and replace old unsafe roof at the Districts Maintenance Yard located at Fogelson Park.
Mojave River Area Water Conservation	1) Increase irrigation water efficiencies by 15 to 20 percent. 2) Reduce wind erosion to 5 ton/a/year on 6,000 acres. 3) Reduce sheet and rill erosion to 5 ton/ year on 6,000 acres. 4) Assist producers to achieve better animal distribution on rangeland and to develop water facilities. Protect T and E species.
Mojave River Wastewater Discharge Study (3-136-250)	The Mojave Groundwater Basin, which provides water for the high desert area, is currently in a state of significant overdraft. Implementing the use of reclaimed water for irrigation and other beneficial and industrial applications is one of several management options which have been proposed to reduce overdraft and lessen the high desert's dependence on imported supplies. The Victor Valley Reclamation Authority is studying the feasibility of building subregional wastewater treatment plants to reclaim water.
Northern and Eastern Colorado Desert Coordinated Ecosystem Management Plan	Recovery for Desert Tortoise, management of other plant & animal species of concern, greater sophisticated approaches to habitat management.
Optimum Basin Management Program for Chino Basin - 205(j) Groundwater Monitoring Program	The Chino Basin 205(j) Groundwater Monitoring Program (CB205JMP) provides an evaluation of water levels and water quality in the groundwater of Chino Basin, a priority watershed in the Santa Ana Region. Approximately 200 wells located in the southern portion of the Chino Basin were sampled. The water quality data included general minerals, with a focus on TDS and nitrogen species. The collected water quality and water level data were used to develop detailed water quality and water level contour maps. The maps provide the necessary information to evaluate influent water quality to desalter well fields and facilities (using reverse osmosis technology), new recharge sites, and pumping patterns. The monitoring program is an integral component of the OBMP, a fully participative watershed-wide plan that is funded locally by approximately 40 water, wastewater, and pumping entities in the Chino Basin. The OBMP addresses critical water quality problems in localized portions of groundwater in Chino Basin.
Ord Mountain Area	To develop and implement route network for recreational use.

Project Title	Project Purpose
Parish Springs Tamarisk Removal	Eradication of tamarisk in isolated desert springs.
Pebble Plains Restoration	Limit soil erosion, replace lost soil volume, return native vegetation, and develop successful methods for restoring this rare alpine plant community.
Picture Canyon Tamarisk Removal	Eradication of tamarisk in isolated desert springs.
Pistol Range Revegetation Experiment	To restore old pistol range within the park and to experiment on soils in which the plants are grown.
Puente-Chino Hills Wildlife Corridor	Preservation of urban open space, conservation of regional biodiversity, and prevention of habitat fragmentation.
Rathbun Creek / Big Bear Lake Sedimentation / Nutrient Control Project	Big Bear Lake has been designated as an impaired body of water due to the excessive sediment and nutrient loading. Water studies conducted by the SARWCB indicated that phosphorus is the limiting nutrient in Big Bear Lake. Rathbun Creek, of all tributaries contributed the most nutrient loading for both total nitrogen and total phosphorus.
Rathbun Creek Watershed Restoration Project Phase I	To reduce the amount of sediment nitrogen and phosphorous flowing into Big Bear Lake.
Rathbun Creek Watershed Restoration Project Phase II	Section 314 Clean Lake Study Phase I completed in May 1994 identified Rathbun Creek as the tributary with the highest loadings of nitrogen and phosphorus to Big Bear Lake. High flows in Sand Canyon Creek caused excessive erosion of the banks.
Red Rock Falls Springs Tamarisk Removal	Eradication of tamarisk in isolated desert springs.
Red Springs Tamarisk Removal	Eradication of tamarisk in isolated desert springs.
Richard Rollins Park Renovation [C0207384_02-36-004]	Redevelopment of city park and middle school recreaion field's surrounding landscaping, lighting, and new restroom/concession building.

Project Title	Project Purpose
Robert A. Sessions Memorial Sportspark Renovation [C0207378_02-36-001]	Rebuilding six infields and sprinkler systems, installing overhead covers with mist cooling system, constructing concrete slabs between each field to provide spectator overflow and supply storage space, and build retaining walls and concrete curbs to prev
Sacramento Springs Tamarisk Removal	Eradication of tamarisk in isolated desert springs.
Salt Creek Area of Critical Environmental Concern	Riparian restoration.
San Bernadino / Chino Ag Perserve Land Use Plan (3-144-225)	The purpose of this study was to determine whether or not the dairy industry has a long term future in the Chino Valley and what problems could result from continued urbanization.
San Bernardino County Alligator Project (0357)	To control and eradicate Alligatorweed from county.
San Bernardino County Artichoke Thistle Control (0366)	To control and eradicate artichoke thistle from the county.
San Bernardino County Camelthorn Control (0360)	To control and eradicate Camelthorn from the county.
San Bernardino County Dalmation Toadflax Control (0361)	To control and eradicate Dalmation toadflax from the county
San Bernardino County Halogeton Control (0362)	To control and eradicate Halogeton from the county.
San Bernardino County Harmel Control (0363)	To control and eradicate Harmel from the county.
San Bernardino County Italian Thistle Biological Control Project (0085)	Biological control of italian thistle a noxious weed of rangelands and right-of ways in San Bernardino County.

Project Title	Project Purpose
San Bernardino County Klamathweed Biological Control Project (0123)	Biological control of klamathweed a noxious weed of rangelands and right-of ways in San Bernardino County.
San Bernardino County Perennial Peppercress (0369)	To control and eradicate perennial peppercress from county.
San Bernardino County Russian Knapweed Control (0367)	To control and eradicate Russian Knapweed from the county.
San Bernardino County Russian Thistle Biological Control Project (0192)	Biological control of Russian thistle, a noxious weed of rangelands and right-of-ways, in San Bernardino County.
San Bernardino County Scented Gaura Control (0368)	To control and eradicate Scented Gaura from the county.
San Bernardino County Spotted Knapweed Control (0364)	To control and eradicate Spotted Knapweed from the County.
San Bernardino County White Horsenettle Control (0365)	To control and eradicate White Horsenettle from the county.
San Bernardino Plant, Phase A-1 & B-1Revegetation Project	Restore natural components of an alluvial fan sage scrub to extent practiable for wildlife use. Restore a self-sustaining community while providing erosion control.
San Timoteo Creek Restoration (8-091-258-0)	This program has two major goals: to restore the beneficial uses of Mill Creek and to serve as a model for the Santa Ana Watershed Management Group to use in implementing water quality treatments to protect smaller portions of the watershed as a means of managing the greater Santa Ana Watershed.

Project Title	Project Purpose
San Timoteo Watershed Management Authority Urban Runoff Management Strategy	The purpose of this project was to characterize water quality changes that could occur in the San Timoteo Watershed as a result of projected changes in land use, to develop and apply modeling tools to analyze solutions, and to develop a comprehensive urban runoff management and recharge strategy to protect and enhance water quality. Short-term Goals: Characterize current and projected surface water quality and discharge within the San Timoteo Watershed. Develop analytical tools for future analyses. Long-term Goals: Develop an urban runoff management strategy to integrate stormwater management, water quality protection and enhancement, supplemental water recharge, water supply reliability and groundwater management strategies with flood control, public access and recreation management strategies.
Santa Ana Basin Water Quality	1) Install waste management practices on 40-50 dairies that meet local requirements for waste discharge. 2) Reduce Flooding from upstream urban sources on 2,000 acres. 3) Install pasture improvement practices on 500 acres. 4) Install water conservation practices on 1,000 acres.
Santa Ana Region Aboveground Storage Tanks Program	The purpose of this program is to protect the public and the environment from the serious threat of millions of gallons of petroleum derived chemicals stored in thousands of aboveground storage tanks.
Santa Ana Region Bay Protection and Toxic Cleanup Program	The California Water Code requires that the State board and Regional Boards establish programs for the maximum protection of beneficial uses of bays and estuaries, focusing on water quality problems due to toxic substances.
Santa Ana Region Department of Defense Facilities Water Quality Program	Significant groundwater contamination has been detected at the six major Department of Defense Facilities in the Santa Ana region. The purpose is to investigate and cleanup the environmental problems at theses facilities.
Santa Ana Region Disposal of Hazardous Waste and Non-Hazardous Waste to Land Program	The purpose of this program is to properly manage the disposal of hazardous and non-hazardous waste so as to not diminish the beneficial uses of water in the region.
Santa Ana Region Groundwater Contamination From Volatile Organic Compounds Program	In 1984, legislators passed a bill requiring the California Department of Health Services to develop and implement a program to require the sampling of public drinking wells for volatile organic compounds. As a result of the indication of extensive organic compound contamination in the region, the State Water Board and Regional Water Board initiated the Well Investigation Program.
Santa Ana Region Leaking Underground Storage Tanks Program	This program addresses the fact that there are approximately 2,000 known cases of leading underground storage tanks in the Region.

Project Title	Project Purpose
Santa Ana Region Nonpoint Source Program	The State Water Quality Control Board adopted the Nonpoint Source Managment Plan n 1988, and it established a statewide policy for managing nonpoint source inputs to California's waters, and is included in the Santa Ana Region's Basin Plan.
Santa Ana Regional Interceptor - SARI	To transport non-reclaimable wastewater (high saline wastewater) from the Upper Santa Ana River Basin to the ocean for disposal, after treatment. To recover and protect water resources in the watershed. The first step is the completion of the SARI pipeline. The next step is to get customers into the SARI. At the same time, recovery of the contaminated basins requires pumping and desalting. The Chino Basin Desalination Program is the first step towards desalting groundwater as a beginning to recover the basin. The brine will be discharged to the SARI.
Santa Ana River Basin Water Quality Control Plan	The federal Clean Water Act and the California Porter-Cologne Water Quality Control Act require that the Regional Board adopt a water quality control plan to guide and coordinate the management of water quality in the Region. This plan was adopted in 1975, and numerous amendments are adopted to modify the specific Basin Plan water quality standards and policies to reflect current water quality conditions and priorities.
Santa Ana River Use Attainability Analysis	To establish the beneficial uses that can be attained in the Santa Ana River and recommend site-specific water quality objectives (SSO's) to protect those beneficial uses.
Santa Ana Watershed Volunteer Monitoring and Public Outreach (01-056-258-0)	To conduct community outreach and education to increase the awareness of the general sources of pollution and ways nonpoint source pollution can be prevented, and collect monitoring data to target nonpoint sources of pollution in urban runoff.
Sarzotti Park Improvements [C0207563_02-56-003]	Phase 1 of the development of Central Park includes the construction of a 50,000 sq ft. Senior/Community Center and 10-20 acres of park and open space.
Shadow Mountains Road Removal & Desert Habitat Restoration Project	Remove unnecessary habitat damaging roads, and improve management of ORVs on public land, to benefit desert tortoise, Mojave Ground Squirrel and other T & E species recovery.
Shadow Valley Halogeton Control	Eradication of halogeton at I-15 and Cima Road.
Sheepcamp Springs Tamarisk Removal	Eradication of tamarisk in isolated desert springs.

Project Title	Project Purpose
Shipiro CFIP [8CA03355]	Site preparation, tree planting, erosion control and watercourse protection in area burned by Old Fire in 2003.
Smith Springs Tamarisk Removal	Eradication of tamarisk in isolated desert springs.
South Side Community Center [C0207398_02-36-008]	Property acquistion for future park land development.
Studio Springs Tamarisk Removal	Eradication of tamarisk in isolated desert springs.
Tamarisk Control in Joshua Tree National Park (0383)	To eradicate tamarisk in Joshua Tree National Park.
Tan Tan Springs	Eradication of tamarisk in isolated desert springs.
The Upper Santa Ana Watershed-Wide Invasive Species Eradication and Public Outreach Plan	To develop a systematic, comprehensive and workable watershed-wide invasive species eradication and public outreach plan for the Upper Santa Ana Watershed.
Thistle Eradication / Aliso & Telegraph Canyons - Chino Hills State Park (0453)	To remove non-native plant species including artichoke thistle, Italian thistle, milk thistle, and fennel from Chino Hills State Park. The primary goal is to treat the remaining infestations of artichoke thistle and milk thistle, while completing initial treatments on Italian thistle and fennel.
Tree Removal And Rehab At Various Parks [C0207399_02-36-003]	Removal of diseased and dead trees at five parks (Dana, Lillian, Foglesong, Waterman, and Sturnacle Parks) and replacement of old lighting fixtures in the Dana Park Rec Building.
U.S. Bureau of Mines & Joshua Tree NP Revegetation Study	Mine reclamation
Upper Santa Ana River Fish Habitat Improvement	Improve fish passage; Improve refuge cover; Increase pools

Project Title	Project Purpose
USGS CA497 Ground Water and Surface Water, Mojave River	Document the sources and quantities of historical ground-water recharge and discharge along the Mojave River. Define hydraulic conditions that control exchange of water between the river and the ground-water system. Identify reaches of the river suitable for artificial recharge.
USGS CA524 Santa Ana National Water Quality Assessment	To determine status and trends of water quality in the basin and evaluate potential causes of degradation.
USGS-SCAMP Southern California Areal Mapping Project	As a cooperative mapping project between the USGS and the California Division of Mines and Geology, the goals are to provide multi-purpose geologic map information for the population centers of southern California. The geologic information is presented on map sheets at several scales, covering 28 1:100,000 scale map sheets covering much of southern California. In response to recent El Nino events the landslide and debris flow maps have taken on immediate uses. Prediction of locations and likelihood of various hazardous conditions that may result from El Nino storms can be found on the internet at: http://geology.wr.usgs.gov/wgmt/elnino/
Victor Valley Septic Tanks Project (7-170-160)	The purpose of this study is to determine if contaminants from the septic tank systems have the potential to affect the future use of the water-supply aquifer in the Upper Mojave River Basin.
West Mojave Coordinated Management Plan	To define land management and land use strategies for the western region of the Mojave Desert that will: 1) Provide for the protection of natural ecosystems in appropriate areas, within the context of biodiversity, so that viable populations of plant and animal species can be maintained and future listings of species as threatened or endangered can be minimized. 2. Provide for the conservation and recovery of State and Federally listed and candidate plant and animal species as wild populations in their natural habitat in a manner that will maintain long-term population viability and genetic diversity. 3. Provide for appropriate resource uses and community expansion while, with a regional context, enhancing the long-term viability of plant and animal species and the ecosystems upon which they depend. 4. Provide for the streamlining of procedures.
West Well Pond Tamarisk Removal	Eradication of tamarisk in isolated desert springs.
Wildwild Canyon, Phase II (Porter Acquisition) [6537]	This acquisition represents the second phase an acquisition for the new state park in San Bernardino County.
Wimpy Springs Tamarisk Removal	Eradication of tamarisk in isolated desert springs.

Project Title	Project Purpose
Ventura County	
BLM Control of Tamarisk (0246)	To control tamarisk.
California's Coastal NPS Control Implementation and Statewide NPS Program Coordination	The goals of this project are to: (1) enhance coordination of all partners involved in implementing actions identified in the Nonpoint Source (NPS) Program Plan; (2) support and promote collaboration amongst the Interagency Coordinating Committee (IACC); (3) support implementation of 61 identified management measures (MMs) by 2013, in part by co-leading and convening meetings for the IACC; (4) enhance CCC's local NPS outreach efforts by targeting resources on priority issues including local coastal program development and update; (5) support California's water quality agencies' efforts in implementing their storm water programs; (6) continue internal staff NPS oversight and training to ensure consistency in applying NPS measures; and (7) protect California's Critical Coastal Areas (CCAs) by developing site-specific action plans.
Calleguas Creek Pollutant Load Investigation (7-120-250)	The purpose of the project is to collect the additional information needed to develop TMDL's and to use this information, together with the information to be collected under the characterization study, to estimate pollutant loads from point and nonpoint sources, develop preliminary TMDL's and load allocations, and evaluate potential control strategies. Based on the study, recommendations will be made for the logical next steps in the TMDL development process and a plan to implement the recommendations will be developed. Objective: To utilize BMP's targeting the chloride introduction from the interaction between surface water and groundwater in the implementation plan for the TMDL. This project will address CZARA management measures for agriculture sources of nonpoint pollution.
Calleguas Creek Watershed Treatment Phase I-II (5-138-254-0) (7-118-254-0)	Phase 1: This project will demonstrate best management practices in priority subwatersheds of the Calleguas Creek Watershed. Selected conservation practices and technical assistance will improve water quality by reducing erosion, runoff and sediment transport to downstream water bodies. Phase 2: This project intends to demonstrate successful subwatershed channel stabiliztion methods which are owned and operated by multiple landowners, This project will demonstrate subwatershed channel stabilization through the use of grade stabilization and streambank restoration.
Caltrans: Bardsdale Bridge	Mitigation for impacts of transportation projects.

Project Title	Project Purpose
Caltrans: Bear Creek	Mitigation for impacts of transportation projects.
Caltrans: Casitas Creek	Mitigation for impacts of transportation projects.
Caltrans: Goodwin Creek	Mitigation for impacts of transportation projects.
Caltrans: Moorpark Wetland	Mitigation for impacts of transportation projects.
Caltrans: Piru Creek (a)	Mitigation for impacts of transportation projects.
Caltrans: Santa Clara River (a)	Mitigation for impacts of transportation projects.
Caltrans: Santa Clara River (b)	Mitigation for impacts of transportation projects.
Caltrans: Ventura River	Mitigation for impacts of transportation projects.
Caltrans: Ventura Route 118 Gap-Closure Project	Mitigation for impacts of transportation projects.
Carl Moyer Program For South Coast AQMD [CMP-22]	Carl Moyer Program for South Coast Air Quality Management District
Carl Moyer Program For South Coast AQMD [CMP-45]	Carl Moyer Program for South Coast Air Quality Management District
Carl Moyer Program For Tehama County APCD [CMP-24]	Carl Moyer Program for Ventura County AIr Pollution Control District

Project Title	Project Purpose
Carl Moyer Program For Tehama County APCD [CMP-47]	Carl Moyer Program for Ventura County AIr Pollution Control District
Carpinteria Bluffs Restroom/Storage Bldg [C0207466_02-42-001]	Construction of a restroom/storage building.
Central Park Senior Community Center Project [C0207390_02-36-002]	Improvements to Libbey Park
City of Ojai Urban Watershed Assessment and Restoration Plan	Planning, Survey, study, research
Cuyama Valley Irrigation Water Management & Groundwater Study	This study was to address acute groundwater overdraft in the Cuyama Valley.
Detection, Control and Eradication of Caulerpa taxifolia	Although C. taxifolia is in the process of being eradicated in CA, the methods used in the present infestations were developed for protected areas having quiescent water. Since C. taxifolia is capable of establishing in high-energy coastal habitats, the objectives and goals of this project are:1. Develop better detection methodologies and approaches for coastal / near coastal areas; 2. Develop alternative containment and eradication methods for high-energy coastal/near coastal habitats 3. Develop a specific Rapid Response Implementation Plan for containment/eradications in high-energy habitats.
El Rio Forebay Groundwater Contaminant Elimination Project - Strickland Acres Sewer Collection System	The California Regional Water Quality Control Board, Los Angeles Region (RWQCB) adopted Resolution No. 99-13 on August 12, 1999, prohibiting further use of all septic systems within the El Rio area by January 1, 2008. This project consists of public outreach, preparation of plans and specifications, construction of the sewer collection system, agreement with the City of Oxnard for sewer service, and establishment of a policy for the connection of existing structures to the sewer collection system and abandonment of existing septic systems within the Strickland Tract area to comply with the Los Angeles Regional Water Quality Control Board Septic Tank Prohibition.

Project Title	Project Purpose
El Rio Sewer System Project (II)	The Los Angeles Regional Water Quality Control Board (LARWCQB) adopted Resolution No. 99-13 on August 12, 1999, prohibiting further use of all septic systems within the El Rio Community by January 1, 2008. This project consists of public outreach, preparation of plans and specifications, construction of a sewer collection system for a portion of the El Rio Community, agreement with the City of Oxnard for sewer service to comply with the LARWCQB Septic Tank Prohibition. A funding program will also be established to assist low income homeowners to connect and permanently abandon the septic systems once the collection system has been constructed.
Farmont Ranch [4781]	Grant to Ojai Valley Land Conservancy to acquire 1,500 acre ranch including three miles of Ventura River
Fillmore Hatchery Slope Stabilization	Increase road / upslope drainage
Gene Marshall-Piedra Blanca National Recreation Trail and Steelhead Habitat Rehabilitation and Youth Employment Program	Decrease erosion/stream sedimentation, Decrease run-off contaminant input to stream, Increase road/upslope drainage
Gene Marshall-Piedra Blanca National Recreation Trail And Steelhead Habitat Rehabilitation And Youth Employment Program [P0250011]	Reduce siltage and erosion through renovation and rerouting of 9.5 miles of foot trails away from spawning areas. installation of water bars, and replanting riparian areas with willow cuttings. Project will provide over 7000 hours of employment to 100 disadvantaged youth.
Harvey Dam Fish Passage Project	Improve fish passage
Libbey Park Creek (DWR #Z60154)	The purpose of this project is to continue a long-term restoration and maintenance project along a stream reach within Libbey Park in Ojai, California.
Libbey Park Improvements [C0207563_02-56-002]	Improvements to Sazatotti Park.
Libbey Park Stream (DWR #Z60145)	The purpose of this project is to address maintenance and erosion problems in the streams located in Libbey Park in Ojai, California.

Project Title	Project Purpose
Los Angeles Volunteer Monitoring and Education (00-123-254-0)	To encourage and increase public involvement and to maximize data quality from citizens in volunteer monitoring programs. SCMI provided training, guidance, field consultations, and quality assurance sessions open to all of the region's volunteer monitoring organizations.To provide an illustrated field guide for sampling and analysis performed by volunteer monitors. This field guide was patterned after the proven model provided by the Heal the Bay Stream Team Field Guide. In addition to its obvious value to volunteer monitors, this Field Guide will be an educational resource made available to participating schoolteachers.To expand and coordinate seasonal water monitoring "snapshot" efforts. The existing volunteer monitoring effort within Region 4 was restructured and expanded in order to assess and report water quality on the same day in all the region's watersheds, which include: Los Angeles River watershed, San Gabriel River watershed, Dominguez Channel watershed, and Santa Monica Bay Watershed Management Area (WMA).To assist groups in data entry and transmittal, thereby assisting the Regional Board staff in their water quality assessment and TMDL efforts. All credible data collected by participating volunteer groups and the lead agency, in all of the local watersheds, was entered on a computer database and transmitted to the Regional Board via email monthly.To increase public awareness and stewardship of our water resources, thereby changing wasteful practices resulting in lower pollution levels over time.Recommendations for revisions to the Southern California Volunteer Monitoring Quality Assurance Project Plan (QAPP).
Malibu Creek Watershed Natural Resources Plan	Development and implementation of innovative and integrated management planning strategies and practices that will maintatin an enhanced quality of water in Malibu Creek along with quality of the watershed.
Malibu Creek Watershed Protection Project (4-090-254-0)	The purpose is to reduce pollution sources through implementing manure management. Will develop strategies and thorough stabilization and regulation of disturbed stream banks.
Matilija Coalition Organizational Support	Education, training; Rearing, rescue, release
Matilija Dam Studies [4800]	Authorization to expend $1,750,000 on studies to determine the feasibility of remvoing Matilija Dam. Removal of the dam would allow fish passage and sediment movement.
McGrath Lake Oil Spill Restoration Project	The purpose of this project is to restore natural resources impacted by an oil spill that occurred within this State Park Unit.

Project Title	Project Purpose
McGrath Lake Watershed / McGrath Drain Project	The goal of this project is to reduce sediment-borne contaminant loading of McGrath Lake and the Santa Clara River.
Moranda Park Improvements [C0209912_RZ-56-007]	Renovation of existing restrooms, purchase, and install picnic benches & tables, move practice softball field, replace carpet and paint building in tennis complex building.
Mugu Lagoon Irrigation Water Management (1-109-254-0)	This projects goal is to reduce the delivery of nutrients and pesticides to Mugu Lagoon
Nutrient Reduction in Streams - Ecological Equine Management	Corralled animals, primarily horses are adding high amounts of nutrients from manure to the stream systems. This project will develop and implement Best Management Practices for managing horses in this watershed and showcase these through public education, management manuals and demonstration sites.
Old Creek Road Crossing Replacement - Phase I	Planning
Ormond Beach Wetlands [4615]	Acquisition, planning, and restoration of 750 acres of wetlands and associated habitat and adjoining wetlands
Poindexter Park Expansion (1) [C0207562_02-56-001]	Acquistion and improvement of 2.02 acre parcel for expansion of Poindexter Park.
Poindexter Park Expansion (2) [C0209930_RZ-56-009]	2.02 Acre Acquisiton.
Regional Wetlands and Watershed Management Plan for Coastal Southern California	To facilitate watershed planning on a regional basis by allowing the 5 county-based task force of the Wetlands Recovery Project to participate in the process of developing the WRP's watershed management planning tools.
Reyes Creek Fisheries Habitat Improvement Project	Improve fish passage
Santa Clara River Enhancement and Management Plan	The purpose of the enhancement and management plan is to resolve conflicts among competing uses in the Santa Clara River while protecting the natural resources of the river.

Project Title	Project Purpose
Santa Maria River Management Plan for Nonpoint Source Pollution Abatement (8-100-250)	The Santa Maria River and the major groundwater basins within the drainage system have been identified by the SWRCB as having impaired water quality, most of which is attributed to nonpoint source pollution. The principal sources identified are sedimentation from excessive erosion, and nitrate contamination. In addition, there has been a substantial loss of riparian cover in some areas. There are no existing comprehensive plans to address these concerns.
Santa Monica Mountains Steelhead Habitat Assessment	Conduct detailed assessment of fish passage barriers and habitat quality, compile and organize existing data sources, set priorities for recovery actions in Santa Monica Mountains.
Santa Paula Creek Restoration	Decrease erosion/stream sedimentation, Increase native plant species composition, Increase stream bank stabilization/protection, Prevent entrainment into water diversion
Santa Paula Creek Restoration [P0250008]	Restore native So. CA Steelhead habitat 100' upstream from Harvey Dam Fish Ladder to enable increased Steelhead survival in upper reaches of Santa Paula Creek. Remove permanent pump sump and replace with removable, seasonal, fish-friendly (screened) irrigation pump. Also, restore and stabilize 100' section of stream bank with native vegetation and rock.
Santa Rosa Basin Ground Water Management Project (3-106-225)	The purpose of this project is to develop a ground water management plan for the Santa Rosa basin which will maximize the utility of all sources of recharge to the basin while protecting the quality of the ground water.
Septic Tank Nutrient Removal Project (0-047-254-0)	This project is designed to demonstrate the nutrient and pathogen removal processes of advanced individual disposal systems from several different manufacturers. Their effciencies will be compared to other treatment systems to determine the possibility of septic system replacement.
South Coast Steelhead Assessment and Recovery Project	Survey, study, research
Steelhead Population Monitoring and Passage Facilities at the Robles Diversion Dam	Improve fish passage; Survey, study, research
Upgrade Bleachers At Sarozotti Park [C0209819_RZ-56-008]	Sarzotti Park ballfield #1 Bleacher upgrade.

Project Title	Project Purpose
USGS-SCAMP Southern California Areal Mapping Project	As a cooperative mapping project between the USGS and the California Division of Mines and Geology, the goals are to provide multi-purpose geologic map information for the population centers of southern California. The geologic information is presented on map sheets at several scales, covering 28 1:100,000 scale map sheets covering much of southern California. In response to recent El Nino events the landslide and debris flow maps have taken on immediate uses. Prediction of locations and likelihood of various hazardous conditions that may result from El Nino storms can be found on the internet at: http://geology.wr.usgs.gov/wgmt/elnino/
Ventura County Klamathweed Biological Control Project (0142)	Biological control of klamathweed a noxious weed of rangelands and right-of ways in Ventura County.
Ventura County Punagrass Control (0373)	To control and eradicate punagrass from the county.
Ventura County Scotch Thistle Control (0372)	To control and eradicate Scotch thistle from the county.
Ventura County Septic Management Study (5-172-250)	The purpose of this project is to develop a Ventura County on-site sewage disposal management plan
Ventura River Watershed Planning	Develop a comprehensive watershed management plan for the Ventura River watershed.
Ventura River Watershed Technical Investigation	Education, training; Organizational support; Survey, study, research
Ventura Stream Team	Collect baseline water quality data on the Ventura River watershed Use data to help identify sources of pollution Educate and train community members to become watershed stewards
Wellhead Protection Demonstration Project (6-055-254-0)	To properly seal wells to eliminate passage of poor quality waters into usable aquifers.

Project Title	Project Purpose
Wildwood Creek Restoration Resources Bond Year 1 [1872325]	The goal of this project is to remove the population of fan palms (Washingtonia filifera and Washingtonia Robustus). These species are non-native, and are beginning to establish themselves in Wildwood Creek, one of the principal perennial streams in Thousand Oaks. Because this species is not thoroughly established in this creek, the project affords an opportunity to remove them with minimal disturbance to native plants along the stream corridor. Ecological Benefits - Wetlands and the riparian lands that typically border them are one of the most biologically productive habitats in California. They provide important breeding grounds for waterfowl and are an essential water source for wildlife. In addition to being valuable habitat, these lands protect water quality by reducing runoff, allow groundwater recharge, and help to control flooding. The loss of 90% of Southern California's wetlands has dramatically reduced the natural ability of water bodies to filter impurities and has been a major factor in the decline of water quality on a regional basis. Washingtonia fan palms impact native plant habitat by competing with native species for water, nutrients and other resources, and may affect the geomorphology of a creek by affecting the direction and speed of stream flow. Fanpalms are naturally found as far north as Palm Springs in Riverside County, and therefore are an exotic species locally. Found in riparian habitats, these palms are beginning to become established in Thousand Oaks, particlarly over the past several years. At maturity, these palms may grow to 50 feet in height and compete with native species such as coastlive oak. These palms also provide nesting sites for non-native birds such as starlings, which in turn compete with native birds for food and other resources. Washingtonia palms are fire-prone, due to the thatch that accumulates along the trunk from dead palms fronds. Education Elements - Educational components of thisproject include a presentation to Corpsmembers on Wildwood Park site history, project descriptionand removal methods they will use. The presentation will provide corps members with an introduction to open space systems and the importance of maintaining wetlands and stream corridors. Project 04-7026

Attachment C: "Open" and Other Land Use Classifications by SCAG Subregion*

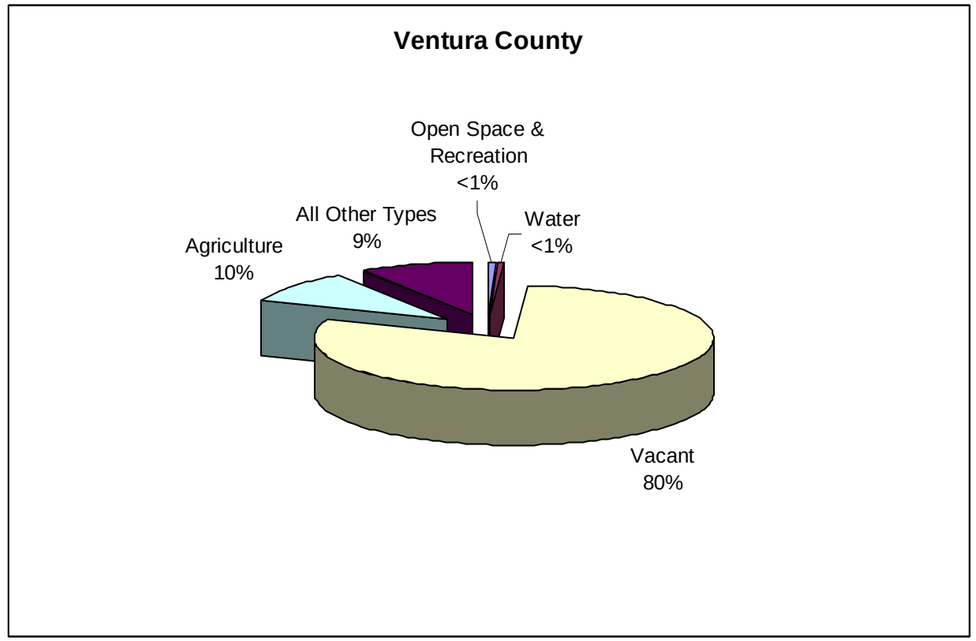
*"Based on SCAG 2002 Land Use Dataset; 2005 land use inventory will be available at the end of July 2006.

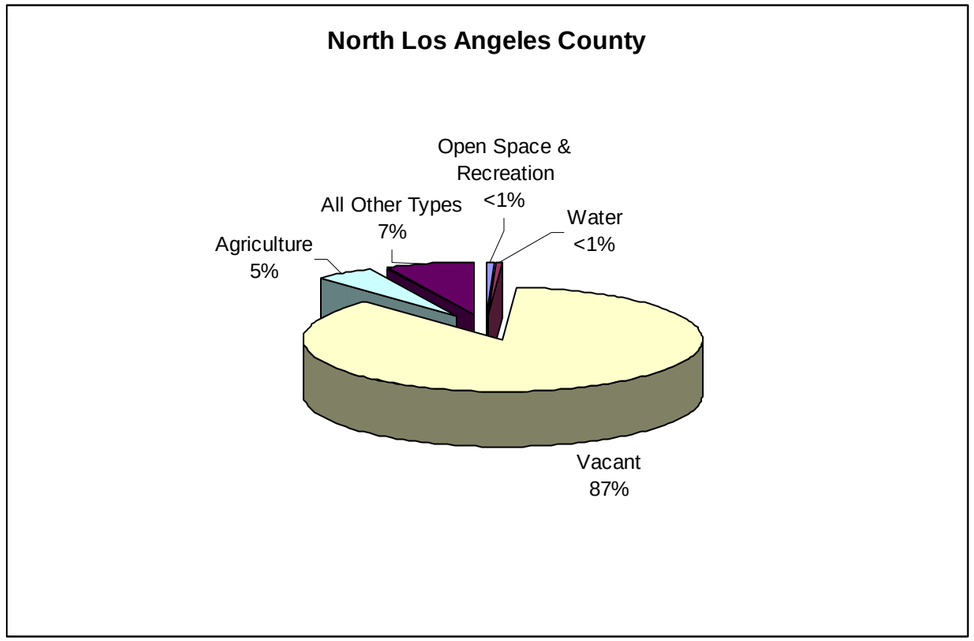
Land Use Category	Ventura County	Los Angeles County								Orange County	Riverside County		San Bernardino County	Imperial County	TOTAL
		North LA County	Las Virgenes/ Malibu	South Bay Cities	City of LA	Westside Cities	Arroyo Verdugo	Gateway Cities	San Gabriel		WRCOG	CVAG			
Open Space and Recreation Lands															
Beach Parks	618.1	0	263.2	321.9	699.2	229.8	0	242.6	0	1,376.9	0	0	0	0	3,751.7
Developed Local Parks and Recreation	1,777.5	866.6	187.2	1,215.7	3,069.0	349.9	389.6	2,421.3	2,417.1	5,734.3	2,590.3	735.3	3,063.3	1,053.1	25,870.2
Developed Regional Parks and Recreation	302.0	320.9	117.8	95.5	914.3	50.5	0.1	803.6	1,084.8	1,198.3	948.9	269.7	1,105.6	72.5	7,284.5
Golf Courses	3,078.7	1,267.2	410.7	1,043.0	3,748.7	11.5	422.7	1,801.8	3,139.1	6,930.4	5,482.0	13,640.0	4,250.0	302.3	45,528.1
Other Open Space and Recreation	1,006.0	2,300.0	183.2	155.4	330.4	72.3	22.2	229.0	244.6	1,316.4	1,973.8	1,167.0	4,316.2	954.9	14,271.4
Undeveloped Local Parks and Recreation	0	98.5	18.2	9.4	0	0	0	3.7	71.9	0	4.6	0	4.5	0	210.8
Undeveloped Regional Parks and Recreation	0	4,741.3	742.8	92.1	421.5	156.6	0	101.5	3,827.6	0	23,656.4	673,250.1	121,665.3	0	828,655.2
Wildlife Preserves and Sanctuaries	896.2	428.4	2.4	62.7	448.2	0	0	5.7	94.6	941.9	2,475.1	1,149.1	33.4	10,586.3	17,124
Specimen Gardens and Arboreta	49.4	4.8	0	86.7	15.5	0.9	32.5	0	361.8	0	13.8	1.8	17.8	0	585
Subtotal	**7,727.9**	**10,027.7**	**1925.5**	**3,082.4**	**9,646.8**	**871.5**	**867.1**	**5,609.2**	**11,241.5**	**17,498.2**	**37,144.9**	**690,213**	**134,456.1**	**12,969.1**	**943,280.9**
Water															
Water, Undifferentiated	4,776.8	7,143.6	262.7	292.6	1,052.4	234.5	1.8	930.6	1,150.3	4,019.8	17,429.4	47,343.3	17,400.0	152,000.3	254,038.1
Water Within a Military Installation	440.8	468.8	0	0	0	0	0	0	0	104.1	65.4	0	10.8	44,532.5	45,622.4
Harbor Water Facilities	0	0	0	0	2,732.4	0	0	9,709.0	0	117.0	0	0	0	0	12,558.4
Marina Water Facilities	199.7	2.1	4.5	43.0	191.0	172.0	0	176.2	0	278.3	0	0	148.8	80.6	1296.2
Subtotal	**5,417.3**	**7,614.5**	**267.2**	**335.6**	**3,975.8**	**406.5**	**1.8**	**10,815.8**	**1,150.3**	**4,519.2**	**17,494.8**	**47,343.3**	**17,559.6**	**196,613.4**	**313,515.1**
Vacant															
Vacant Area	2,766.7	49,922.7	0	6.0	353.2	0	0	6,775.5	0	3,124.0	5,037.6	109,531.2	1,848,924.1	436,329.2	2,462,770.2
Vacant Undifferentiated	933,817.3	1,337,080.6	83,641.9	5,511.9	74,894.7	715.9	13,880.6	0	50,152.3	213,457.1	1,094,152.4	2,019,895.6	10,362,055.6	1,639,478.2	17,828,734.1
Vacant With Limited Improvements	165.6	1,435.7	0	0	9.3	0	0	0	13.0	17.3	806.1	941.7	618.1	9,054.6	13,061.4
Former Base Vacant Area	0	0	0	0	0	0	0	0	0	2,451.6	0	0	3,123.0	7,407.9	12,982.5
Beaches (Vacant)	336.4	0	157.4	18.1	0	0	0	0	0	53.7	0	0	0	0	565.6
Abandoned Orchards and Vineyards	266.9	510.1	18.1	0	2.6	0	0	2.4	3.0	126.2	1,911.5	716.2	1,768.4	25.3	5,350.7
Subtotal	**937,352.9**	**1,388,949.1**	**83,817.4**	**5,536**	**75,259.8**	**715.9**	**13,880.6**	**6,777.9**	**50,168.3**	**219,229.9**	**1,101,907.6**	**2,131,084.7**	**12,216,489.2**	**2,092,295.2**	**20,323,464.5**

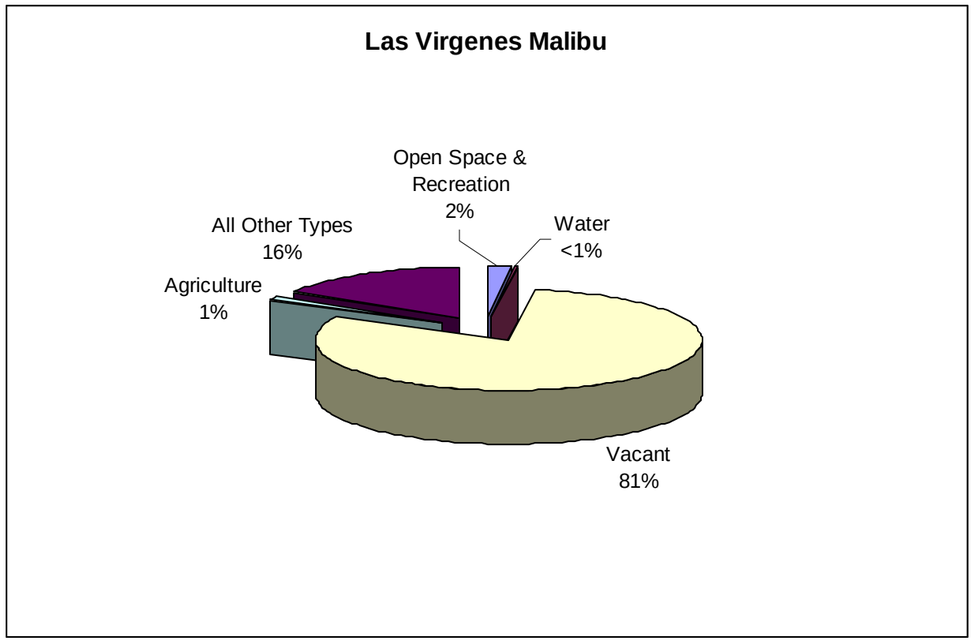
Land Use Category	Ventura County	Los Angeles County								Orange County	Riverside County		San Bernardino County	Imperial County	TOTAL
		North LA County	Las Virgenes/ Malibu	South Bay Cities	City of LA	Westside Cities	Arroyo Verdugo	Gateway Cities	San Gabriel Valley		WRCOG	CVAG			
Agriculture															
Orchards and Vineyards	61,653.1	2,899.5	195.4	14.2	92.2	0.1	0	44.2	141.0	2,879.8	30,254.6	46,344.8	9,991.3	9,190.6	163,700.8
Irrigated Cropland and Improved Pasture Land	38,646.4	57,203.7	247.7	107.6	500.5	0	0	147.3	496.7	4,359.0	40,749.1	123,275.1	43,611.2	490,104.4	799,448.7
Non-Irrigated Cropland and Improved Pasture Land	7,690.8	11,419.9	34.4	0	10.3	0	0	0	9.0	452.6	59,738.9	0	1,646.4	265.4	81,267.7
Dairy, Intensive Livestock, and Associated Facilities	89.4	129.7	0	0	3.4	0	0	5.1	9.7	0	4,253.5	97.9	6,502.5	2,697.0	13,788.2
Horse Ranches	2,167.9	2,556.9	432.3	69.0	554.0	0	55.5	136.9	479.4	647.4	7,449.6	1,742.0	3,191.5	171.4	19,653.8
Nurseries	3,617.1	105.9	53.6	417.1	701.9	0.0	4.0	999.1	1,626.1	3,017.0	2,955.4	1,053.9	1,262.8	519.8	16,333.7
Other Agriculture	1,159.1	966.3	54.4	0	25.2	0	0	7.9	57.3	224.5	3,366.9	4,013.8	1,884.0	2,779.5	14,538.9
	115,023.8	**75,281.9**	**1017.8**	**607.9**	**1887.5**	**0.1**	**59.5**	**1340.5**	**2,819.2**	**11,580.3**	**148,768**	**176,527.5**	**68,089.7**	**505,728.1**	**1,108,731.8**
Total "Open" Types*	**1,065,521.9**	**1,481,873.2**	**87,027.9**	**9,561.9**	**90,769.9**	**1,994.0**	**14,809**	**24,543.4**	**65,379.3**	**252,827.6**	**1,305,315.3**	**3,045,168.5**	**12,436,594.6**	**2,807,605.8**	**22,688,992.3**
All Other Categories	**108,254.1**	**114,770.3**	**17,053.3**	**64,863.7**	**231,552.6**	**16,160.3**	**25,253.9**	**172,777.6**	**162,609.5**	**258,589.0**	**228,647.7**	**94,882.8**	**439,652.2**	**60,575.6**	**1,995,642.6**
Total Area (All Land Use Categories)	**1,173,776.0**	**1,596,643.5**	**104,081.2**	**74,425.6**	**322,322.5**	**18,154.3**	**40,062.9**	**197,321.0**	**227,988.8**	**511,416.6**	**1,533,963.0**	**3,140,051.3**	**12,876,246.8**	**2,868,181.6**	**24,684,635.1**

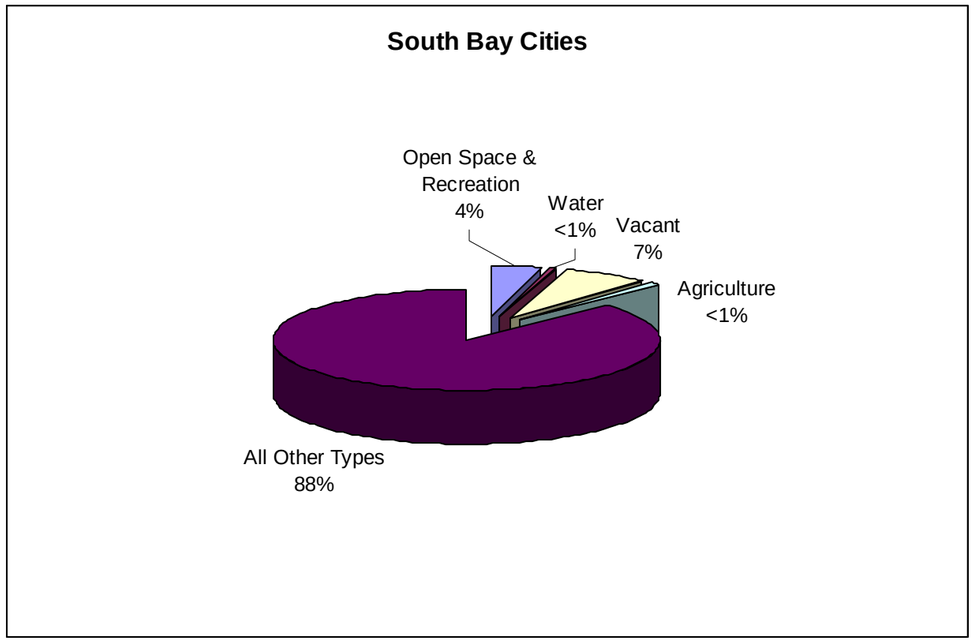
* Does not include cemeteries or poultry farms.

"Open" and Other Land Use Classifications in the SCAG Subregions

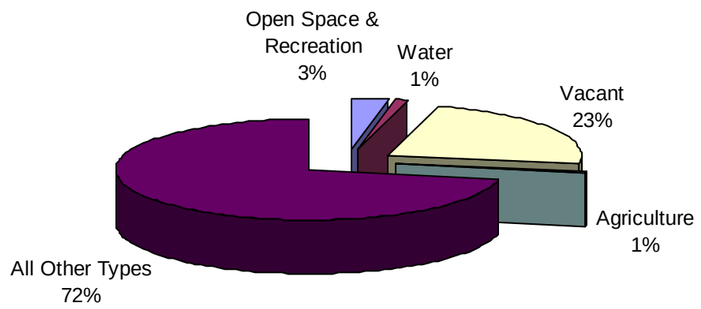




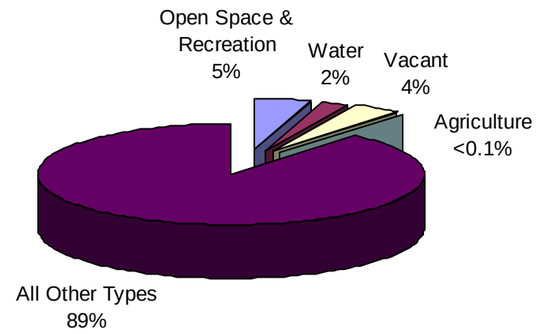

Las Virgenes Malibu
Open Space & Recreation 2%
Water <1%
All Other Types 16%
Agriculture 1%
Vacant 81%

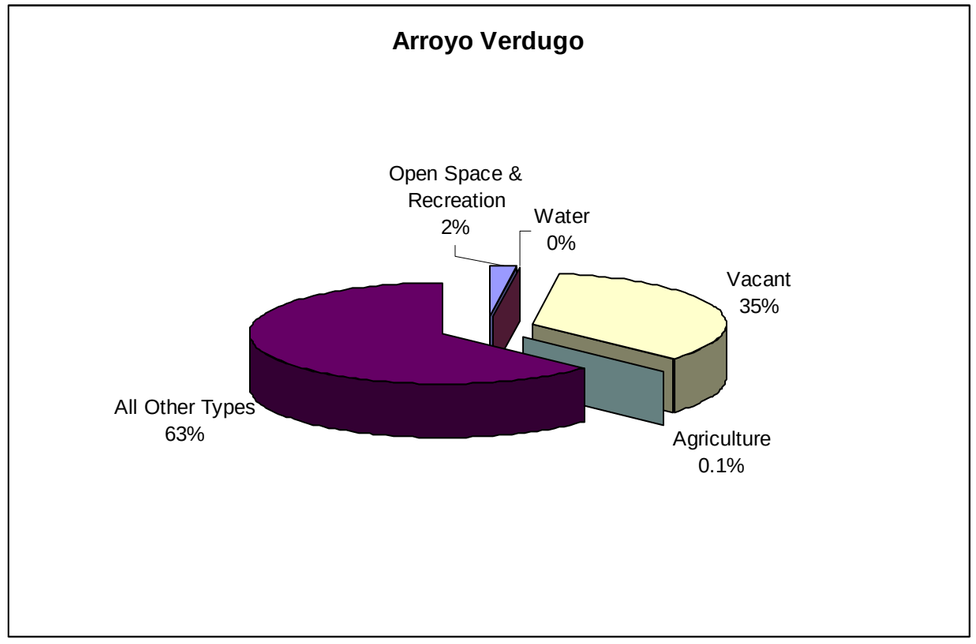

South Bay Cities
Open Space & Recreation 4%
Water <1%
Vacant 7%
Agriculture <1%
All Other Types 88%

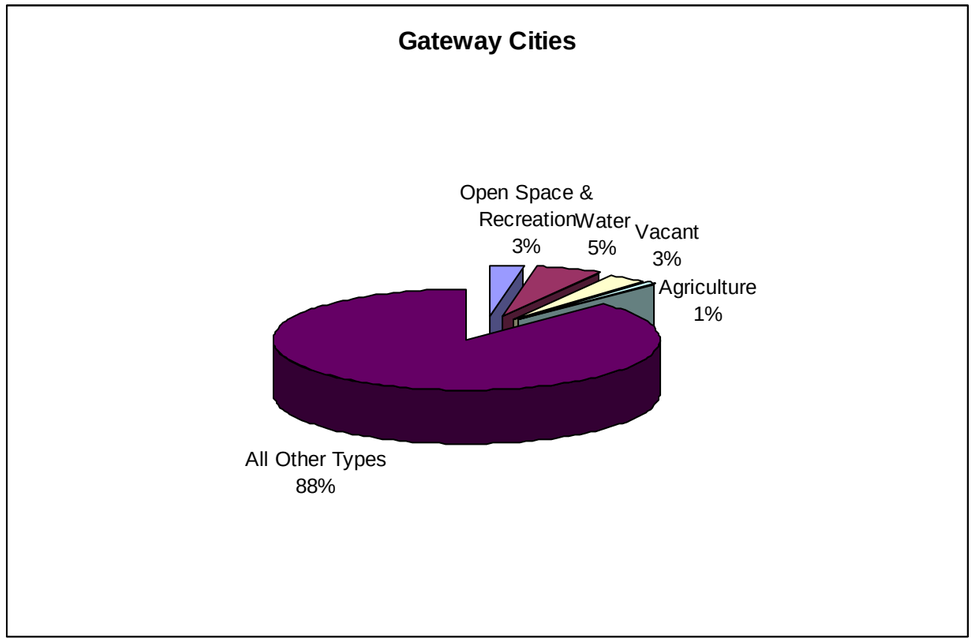
City of Los Angeles



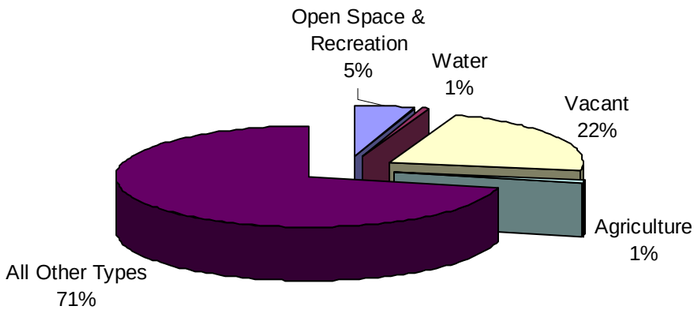
Westside Cities



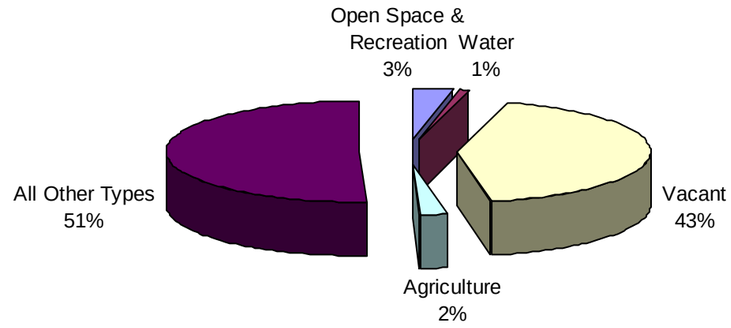

Arroyo Verdugo
Open Space & Recreation 2%
Water 0%
Vacant 35%
All Other Types 63%
Agriculture 0.1%


Gateway Cities
Open Space & Recreation 3%
Water 5%
Vacant 3%
Agriculture 1%
All Other Types 88%

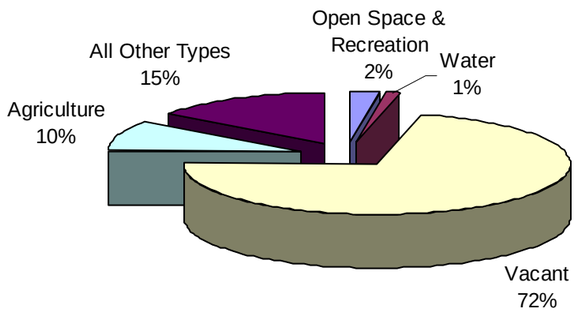
San Gabriel Valley



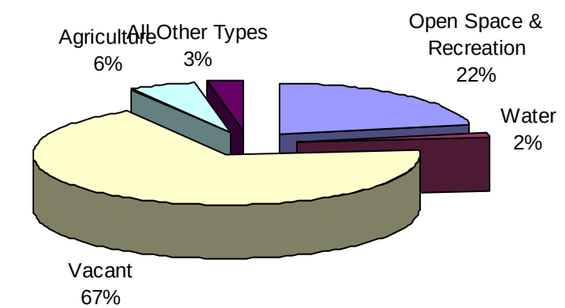
Orange County



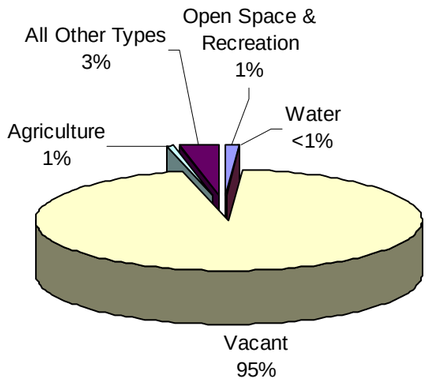
Western Riverside County



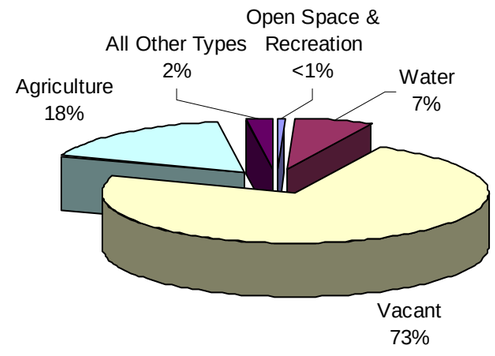
Coachella Valley



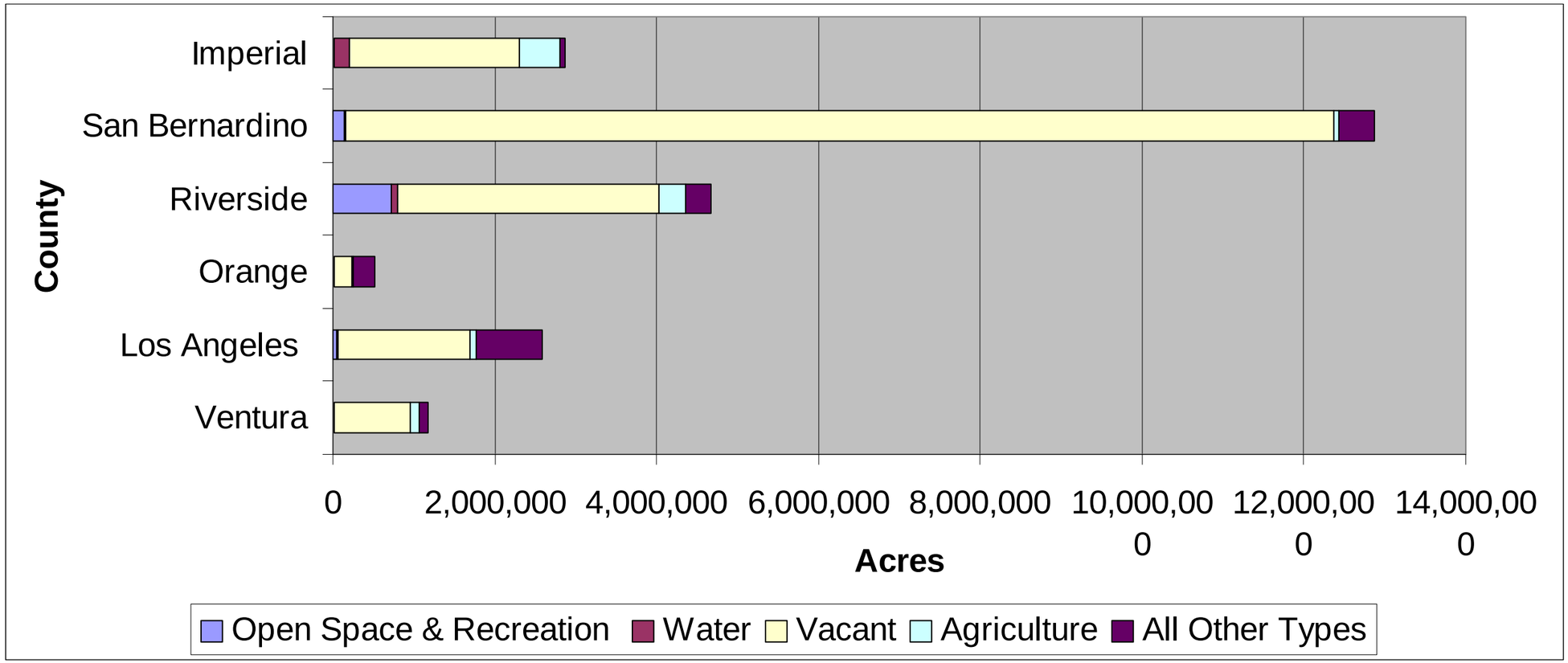
San Bernardino County



Imperial County



"Open" and Other Land Use Classifications in the SCAG Region by County



Attachment D: "Missing Linkages" Studies in the SCAG Region*

*Prepared by Paul Beier, Ph.D.
For copies of the "Missing Linkages" reports, go to www.scwildands.org.

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California Missing Linkages

Species that once moved freely through a mosaic of natural vegetation types are now confronted with a man-made labyrinth of barriers, such as roads, homes, businesses, and agricultural fields that fragment formerly expansive natural landscapes. Movement patterns crucial to species survival are being altered rapidly. To counter these trends, California has initiated a systematic approach for identifying, protecting, and restoring functional connections across the landscape to allow essential ecological processes to continue operating as they have for millennia.

In November 2000, a coalition of conservation and research organizations (California State Parks, California Wilderness Coalition, The Nature Conservancy, Zoological Society of San Diego's Center for Reproduction of Endangered Species, and U.S. Geological Survey) launched a statewide interagency workshop at the San Diego Zoo entitled "Missing Linkages: Restoring Connectivity to the California Landscape". The workshop brought together over 200 land managers and conservation ecologists representing federal, state, and local agencies, academic institutions, and non-governmental organizations to identify "potential linkages" – that is, areas where natural connectivity is at risk. Of the 232 potential linkages identified at the workshop (Figure 1), 69 were associated with the South Coast Ecoregion and 46 were associated with the Mohave and Sonoran Deserts Ecoregion of southern California (Penrod et al. 2001).

Many of these potential linkages fall within the SCAG region (Figure 2) and are limited in several ways:

- Some important potential linkages may not have made it to the map. With no formal way to exhaustively list core areas, some possible pairs of core areas needing connectivity may not have been noticed.

- The potential linkages vary greatly in importance. For example, a potential linkage between 2 small, highly degraded wildlands is less important than a potential linkage between 2 large, intact wildlands.

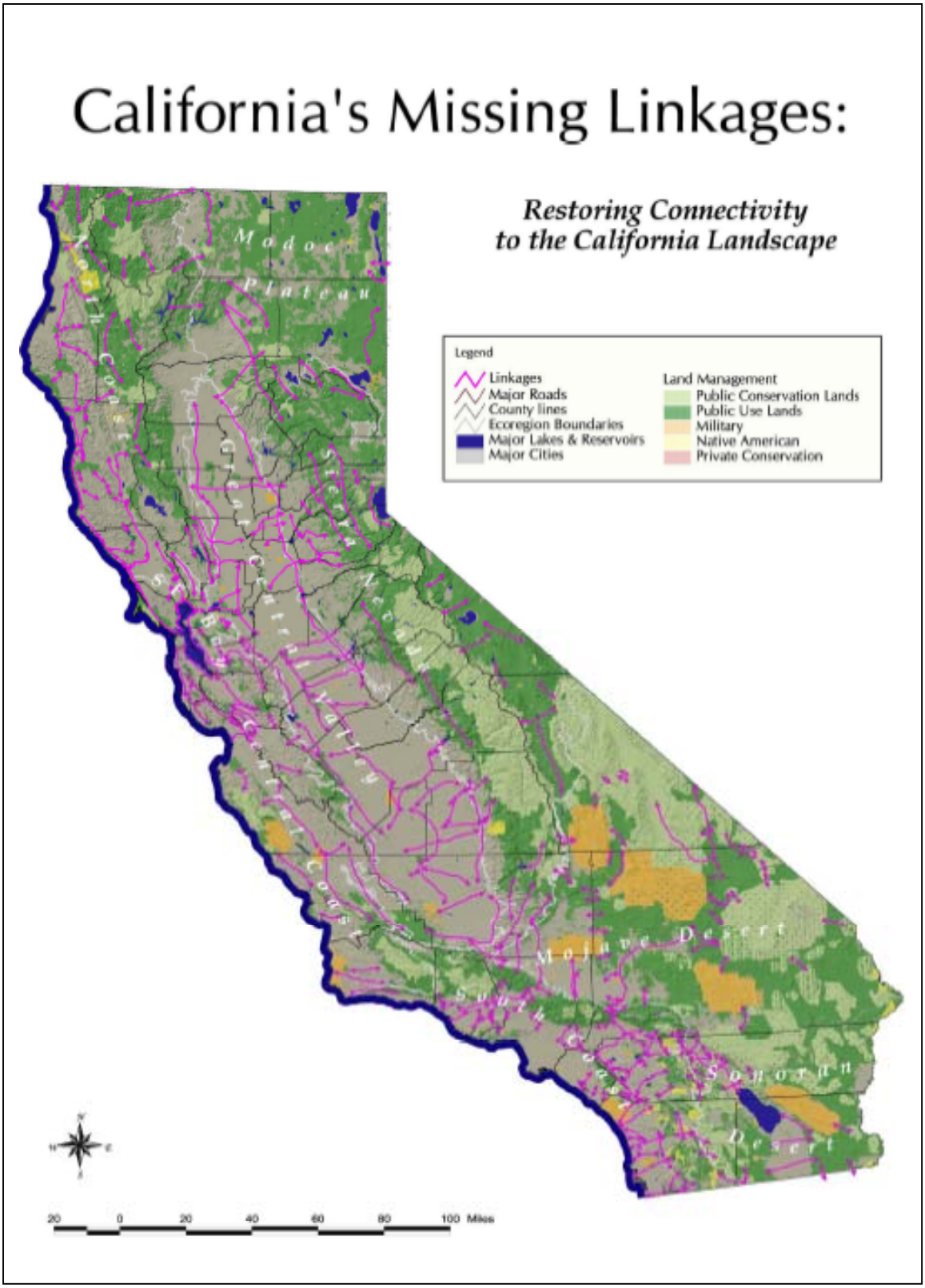

Figure 1. California Missing Linkages Map

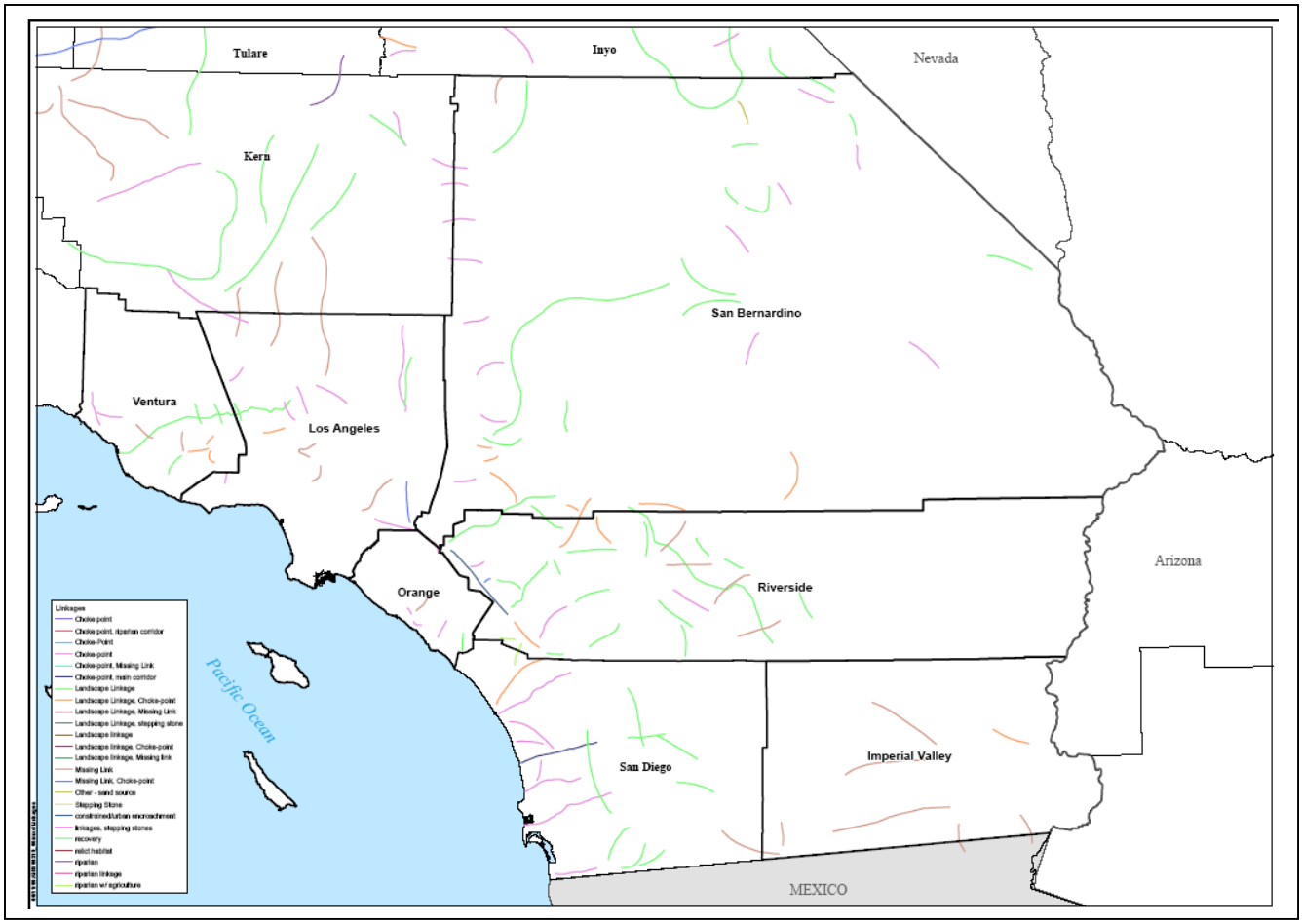

Figure 2. Potential linkages in and near the SCAG Region.

- Some potential linkages may have been permanently obstructed by human development at the time they were put on this list. Others may become obstructed since 2000.

- In some cases what was perceived as one core area in 2000 may now be perceived as 2 core areas delineated by potential barriers (roads, urbanization) that arose since 2000.

For these reasons, we offer a procedure for identifying core areas and potential linkages among them. Nonetheless the potential linkages indicated on the map form a useful reference list for SCAG by indicating areas where, in the opinion of experts familiar with this landscape, wildlife connectivity was both important and threatened.

Prioritizing Potential Linkages

Following the statewide Missing Linkages conference, South Coast Wildlands, a non-profit organization established to pursue habitat connectivity planning in the South Coast Ecoregion, brought together regional ecologists to conduct a formal evaluation of 69 linkages in the South Coast Ecoregion, most but not all of which fall in the SCAG region. The evaluation was designed to assess the biological irreplaceability and vulnerability of each linkage (*sensu* Noss et al. 2002). Irreplaceability assessed the relative biological value of each linkage, including both terrestrial and aquatic criteria: 1) size of habitat blocks served by the linkage; 2) quality of existing habitat in the smaller habitat block; 3) quality and amount of existing habitat in the proposed linkage; 4) linkage to other ecoregions or key to movement through the ecoregion; 5) facilitation of seasonal movement and responses to climatic change; and 6) addition of value for aquatic ecosystems. Vulnerability was evaluated using recent high-resolution aerial photographs, local planning documents, and other data concerning threats of habitat loss or fragmentation in the linkage area. This process identified 16 linkages of crucial biological value that are likely to be irretrievably compromised by development projects over the next decade unless immediate conservation action occurs; eleven of these linkages fall in the SCAG region (Figure 3).

Figure 3. Eleven Priority South Coast Ecoregion Linkages within the SCAG Region

From northwest to southeast the linkages are between:

- Sierra Madre Mountains and Castaic Ranges
- San Gabriel Mountains and Castaic Ranges,
- Santa Susana Mountains and Sierra Madre Mountains
- Santa Monica Mountains and Santa Susana Mountains

- San Bernardino Mountains and San Gabriel Mountains
- San Bernardino Mountains and Granite Mountains
- San Bernardino Mountains and Little San Bernardino Mountains
- San Bernardino Mountains and San Jacinto Mountains (highlighted in figure)
- Palomar Ranges and San Jacinto/Santa Rosa Mountains
- Santa Ana Mountains and Palomar Ranges,
- Peninsular Ranges and Anza Borrego

Note that the South Coast Ecoregion only partially overlaps the SCAG region. Thus these may not be the 11 most important linkages in the much larger SCAG region. The primary reason for mentioning these linkages is because detailed linkage designs exist for these 11 areas (see below).

Linkage Designs for 11 Potential Linkages in the SCAG Region

Identification of these priority linkages launched the South Coast Missing Linkages Project. This project is a highly collaborative effort among federal and state agencies and non-governmental organizations to identify and conserve landscape-level habitat linkages to protect essential biological and ecological processes in the South Coast Ecoregion. Partners include: South Coast Wildlands, The Wildlands Conservancy, The Resources Agency California Legacy Project, California State Parks, California State Parks Foundation, United States Forest Service, National Park Service, Santa Monica Mountains Conservancy, Rivers and Mountains Conservancy, Conservation Biology Institute, San Diego State University Field Stations Program, The Nature Conservancy, Southern California Wetlands Recovery Project, Environment Now, Mountain Lion Foundation, and the Zoological Society of San Diego's Conservation and Research for Endangered Species. Cross-border alliances have also been formed with Pronatura, Universidad Autonoma de Baja California, and Conabio.

South Coast Wildlands coordinated and hosted regional workshops, provided resources to these partners, and conducted GIS analyses for the 11 priority linkages. These 11 plans are available on the South Coast Wildlands website (www.scwildlands.org/), or by request from Kristeen Penrod or Paul Beier. Each report contains several common elements that may be of use to SCAG:

- Ecological Significance of the Linkage: A description of the biological resources in each core area connected by the linkage, and in the potential linkage area, highlighting rare or special-status species and biotic communities.

- Existing Conservation Investments: A list of the publicly-owned and privately-conserved wildlands that would be linked by a functioning corridor, with an emphasis on Wilderness Areas, National Parks or Monuments, and other areas managed predominantly for biological values.

- A list of focal species used to design the linkage. In each linkage area, 12-30 species were selected to represent the entire biotic community and ecological processes. Each linkage design is thus intended to be comprehensive.

- A map of the linkage design. The linkage is typically composed of 2-5 strands or braids, rather than being a single narrow band connecting the core areas. For instance the perennial streams may be joined in a long non-linear strand to serve fish, amphibians, and water-dependent species. A second band might consist of flat scrub and desert grassland to serve species like badgers and jackrabbits. A third strand might be dominated by rugged topography for species such as bighorn sheep. Each strand is broad to buffer against edge effects, such as weed invasion, artificial night lighting, predation by house pets, increases in opportunistic species like raccoons, elevated soil moisture from irrigation, pesticides and pollutants, noise, trampling, and domesticated animals that attract native predators. Width also reduces the risk that fires, floods, and other natural processes might affect the entire linkage simultaneously.

- A summary of land ownership, land cover, and topography in each strand of the linkage design.

- A description and photographs of major threats to wildlife movement, and specific recommendations to mitigate those barriers. These mitigation measures include recommendations for particular types of highway crossing structures at particular locations on major roads, canals, or railroads, recommendations for controlling urbanization, and recommendations for streams.

- A list of land protection and stewardship opportunities in the linkage design.

These reports can be used in the SCAG project to provide (a) detailed information on particular wildlife linkages, and/or (b) a template to ensure that future linkage designs provide similar information, or even more useful types of information.

Attachment E: Analytic Tools for Avoiding, Reducing, and Mitigating Impacts to Wildlife Linkages from Transportation Projects*

*This document is a working draft prepared by Paul Beier, Ph.D.

The impacts of roads[1] on wildlife are diverse (Spellerberg 1998, Forman & Alexander 1998, Forman et al. 2003). In this document, we ignore impacts due to pollution (from combustion, de-icing agents, construction materials), loss of habitat due to the area occupied by the road or urban growth induced by the road, exotic plant species that spread from rights-of-way into wildlands, edge effects due to noise & artificial night lighting, and indirect impacts due to altered hydrology and increased erosion near the road. Although these impacts can be substantial, here we focus on how roads impact the ability of wildlife to move between the remaining wildlands on either side of the road (Table 1).

Table 1. Impacts of roads on wildlife corridors and wildland connectivity, with appropriate mitigations for various types of impacts.

Impact	Appropriate Mitigations
barrier to within-population movement	• crossing structures • conserve habitat leading from each crossing structure to remaining wildlands
barrier to recolonization	
barrier to gene flow	
barrier to seasonal migration	
barrier to ecological processes such as pollination, seed dispersal, predator-prey interactions, nutrient cycling, and shifting geographic range in response to climate change.	• As above, but habitat corridor must be broad and must contain diverse soils & topography to enable entire communities to shift.
mortality due to collisions with vehicles	• roadside fencing (must be integrated with crossing structures)

The main significant impacts of roads on wildlife linkages are several types of barrier effects and direct mortality of animals attempting to cross the road:

- **Barrier to within-population movement:** When a formerly large area of habitat is dissected by roads, it may become impossible for individual animals to move across the road between the remaining wild areas. Thus a 1000-acre area may become two 500-acre areas isolated from each other, and each wildlife population becomes two, smaller, populations. These small areas may be too small to support a population of some wildlife species. The impact is particularly severe for area-sensitive species – that is, species that need a large area to support a population, such as mountain lions, bears, deer, bighorn, badgers, and other large and medium-sized mammals. As a result, populations become demographically unstable and eventually become extinct in each patch.

- **Barrier to recolonization:** Species may become extinct in local areas for a variety of reasons. If migrants can re-colonize the area by moving from nearby habitat, extinction will be temporary. However roads can preclude such recolonization.

- **Barrier to gene flow:** Until recently, most scientists believed it would take at least a century for roads to cause measurable genetic divergence in wildlife populations, especially for long-lived species in which genetic change occurs slowly. However, 2 recent studies, both conducted in the SCAG region, provide the first scientific evidence that 40- to 50-year-old highways profoundly decrease gene flow in large mammals, namely bighorn sheep (Epps et al. 2005) and bobcats and coyotes (Riley et al. 2006).

- **Barrier to seasonal movement:** In the SCAG region, probably only a few large mammal populations migrate between wintering and summer areas. Where such migration occurs, it is critically important that highways have vegetated overpasses or bridged undercrossings to allow mammals to migrate (Berger 2004). Although many birds in the SCAG region migrate, migratory birds can fly across unsuitable habitat and are probably not affected by highways.

- **Barrier to ecological processes** such as pollination, seed dispersal, predator-prey interactions, and nutrient cycling, and shift of geographic range: Of these processes, the ability of animals and natural communities to shift their geographic range is of particular importance, because range shift it the only way (other than extinction) that species and natural communities can respond to climate change. Mitigation for this type of barrier effect will requires a broad linkage.

1 We use the term “road” or “highway” as shorthand for any linear transportation project, including freight rail, high-speed rail, and aqueducts in addition to highways.

- **Mortality of animals attempting to cross roads:** Severe impacts have been documented on the cougar in southern California, the Florida panther, the ocelot, the wolf, and the Iberian lynx (Forman et al. 2003). In a 4-year study of 15,000 km of road observations in Organ Pipe Cactus National Monument, Rosen and Lowe (1994) found a minimum of 22.5 snakes per km per year killed due to vehicle collisions. Using a more frequent monitoring in an area of high turtle density, Aresco (2005) found 11.9 turtles killed per km *per day* along a 4-lane highway in Florida. This impact can be addressed by fencing that prevents an animal from entering the roadway, which can reduce mortality of animals by 80% to 99% (Clevenger et al. 2001a, Dodd et al. 2004, Aresco 2005). However, fencing alone is not a satisfactory solution because it increases the barrier effects listed above – unless the fencing is integrated with other types of mitigations (such as highway crossing structures and conservation of land in the linkage).

The impacts listed above can be avoided, minimized, and mitigated by 2 types of mitigation (Table 1, Table 2), namely crossing structures integrated with roadside fencing, and conserving habitat between crossing structures and affected wildlands. Although there are few scientific studies documenting the effectiveness of underpasses and overpasses in facilitating wildlife movement, there is a clear pattern emerging from those studies, such that it is possible to propose a set of best management practices for crossing structures. GIS tools are needed to identify lands to conserve in the vicinity of road crossing structures (Table 2).

Table 2. The two main types of mitigation for transportation projects

Type of Mitigation	Notes
Crossing structures integrated with roadside fencing	A cookbook set of best management practices (diversity of structures, with 300m spacing between small structures, 1 mile spacing between large structures, design guidelines for structures) is sufficient when a road bisects protected wildland (i.e., habitat is already conserved).
Conserve habitat leading from each crossing structure to remaining wildlands	If developable land occurs in the wildlife linkage, GIS analysis can identify which land to conserve. To date, most such GIS analyses have concerned particular focal species, but it is better for linkages to serve multiple species and to accommodate ecological processes, such as the ability of species to shift their range in response to climate change.

Best Management Practices for Road Crossing Structures

Wildlife crossing structures that have been used in North America and Europe to facilitate movement through landscapes fragmented by roads include wildlife overpasses & green bridges, bridges, culverts, and pipes (Figure 1). While many of these structures were not originally constructed with ecological connectivity in mind, many species benefit from them (Clevenger et al. 2001; Forman et al. 2003). No single crossing structure will allow all species to cross a road. For example rodents prefer to use pipes and small culverts, while bighorn prefer vegetated overpasses or open terrain below high bridges. A concrete box culvert may be readily accepted by a mountain lion or bear, but not by a deer or bighorn sheep. Small mammals, such as deer mice and voles, prefer small culverts to wildlife overpasses (McDonald & St Clair 2004).

Wildlife overpasses are most often designed to improve opportunities for large mammals to cross busy highways. Approximately 50 overpasses have been built in the world, with only 6 of these occurring in North America (Forman et al. 2003). Overpasses are typically 30 to 50 m wide, but can be as large as 200 m wide. In Banff National Park, Alberta, grizzly bears, wolves, and all ungulates (bighorn sheep, deer, elk, and moose) prefer overpasses to underpasses, while species such as mountain lions prefer underpasses (Clevenger & Waltho 2005).

Wildlife underpasses include viaducts, bridges, culverts, and pipes, and are often designed to ensure adequate drainage beneath highways. For ungulates such as deer, tall, wide bridges are best. Mule deer in southern California only used underpasses below large spanning bridges (Ng et al. 2004) and the average size of underpasses used by white-tailed deer in Pennsylvania was 15 ft wide by 8 ft high (Brudin 2003). Because most small mammals, amphibians, reptiles, and insects need vegetative cover for security, bridged undercrossings should extend to uplands beyond the scour zone of the stream, and should be high enough to allow enough light for vegetation to grow underneath. In the Netherlands, rows of stumps or branches under crossing structures have increased connectivity for smaller species crossing bridges on floodplains (Forman et al. 2003).

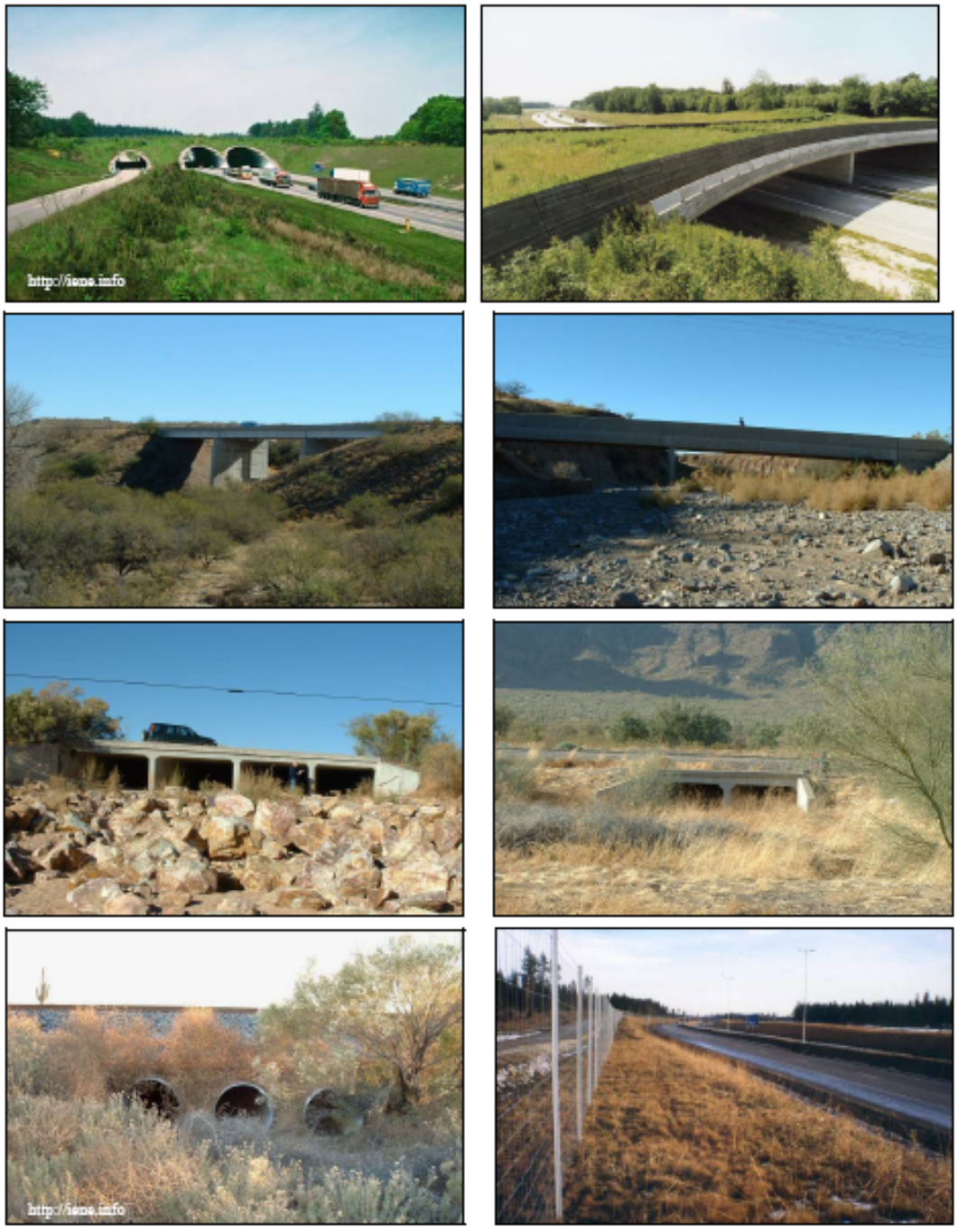

Figure 1. Potential road mitigations (from top to bottom) include: highway overpasses, bridges, culverts, and drainage pipes. Fencing (lower right) should be used to guide animals into crossing structures.

Drainage culverts can mitigate the effects of busy roads for small and medium sized mammals (Clevenger et al. 2001; McDonald & St Clair 2004). Culverts and concrete box structures are used by many species, including mice, shrews, foxes, rabbits, armadillos, river otters, opossums, raccoons, ground squirrels, skunks, coyotes, bobcats, mountain lions, black bear, great blue heron, long-tailed weasel, amphibians, lizards, snakes, and southern leopard frogs (Yanes et al. 1995; Brudin III 2003; Dodd et al. 2004; Ng et al. 2004). Black bear and mountain lion prefer less-open structures (Clevenger & Waltho 2005). In south Texas, bobcats most often used 1.85 m x 1.85 m box culverts to cross highways, preferred structures near suitable scrub habitat, and sometimes used culverts to rest and avoid high temperatures (Cain et al. 2003). Culvert usage can be enhanced by providing a natural substrate bottom, and in locations where the floor of a culvert is persistently covered with water, a concrete ledge established above water level can provide terrestrial species with a dry path through the structure (Cain et al. 2003). It is important for the lower end of the culvert to be flush with the surrounding terrain. Many culverts are built with a concrete pour-off of 8-12 inches, and others develop a pour-off lip due to scouring action of water. A sheer pour-off of several inches makes it unlikely that many small mammals, snakes, and amphibians will find or use the culvert.

Several sets of best management practices related to roads have been published recently (National Cooperative Highway Research Program 2004, Riverside County 2004, National Research Council 2005). There are only a few scientific studies to support these guidelines, and most designs are based on understanding of animal behavior with few data on efficacy of the design. However, the existing literature clearly suggests that almost any crossing structure will be useful to at least some wildlife species, that a variety of structures interspersed along a highway will be useful to many wildlife species, and that steep pour-offs and debris can ruin an otherwise useful structure.

In light of this consensus, the following 9 recommendations provide a set of best management practices that can be applied throughout the SCAG ecoregion. In an area where a road crosses wildland that is protected from development, following these guidelines should mitigate most of the road impact on wildlife movement. However the additional step of GIS analysis (next section) is necessary in areas where multiple roads have cumulative impacts, or developable land occurs between the road and protected wildlands.

1. **Multiple crossing structures should be constructed at a crossing point to provide connectivity for all species likely to use a given area (Little 2003)**. Different species prefer different types of structures (Clevenger et al. 2001; McDonald & St Clair 2004; Clevenger & Waltho 2005; Mata et al. 2005). For deer or other ungulates, an open structure such as a bridge is crucial. For medium-sized mammals, black bear, and mountain lions, large box culverts with a natural earthen substrate flooring are optimal (Evink 2002). For small mammals, pipe culverts from 0.3m – 1 m in diameter are preferable (Clevenger et al. 2001; McDonald & St Clair 2004). Maintain a height of 3 m and an appropriate openness ratio of at least 0.6 for crossings intended for use by mule deer; calculate this ratio as opening width x opening height/length of crossing (Riverside County 2004).

2. **At least one crossing structure should be located within an individual's home range**. Because most reptiles, small mammals, and amphibians have small home ranges, metal or cement box culverts should be installed at intervals of 150-300 m (Clevenger et al. 2001). For ungulates (deer, pronghorn, bighorn) and large carnivores, larger crossing structures such as bridges, viaducts, or overpasses should be located no more than 1.5 km (0.94 miles) apart (Mata et al. 2005; Clevenger and Wierzchowski 2006). Inadequate size and insufficient number of crossings are two primary causes of poor use by wildlife (Ruediger 2001).

3. **Suitable habitat for species should occur on both sides of the crossing structure** (Ruediger 2001; Barnum 2003; Cain et al. 2003; Ng et al. 2004). This applies to both *local* and *landscape* scales. On a local scale, vegetative cover should be present near entrances to give animals security, and reduce negative effects such as lighting and noise associated with the road (Clevenger et al. 2001; McDonald & St Clair 2004). A lack of suitable habitat adjacent to culverts originally built for hydrologic function may prevent their use as potential wildlife crossing structures (Cain et al. 2003). On the landscape scale, "Crossing structures will only be as effective as the land and resource management strategies around them" (Clevenger et al. 2005). Suitable habitat must be present throughout the linkage for animals to use a crossing structure.

4. **Whenever possible, suitable habitat should occur *within* the crossing structure.** This can best be achieved by having a bridge high enough to allow enough light for vegetation to grow under the bridge, and by making sure that the bridge spans upland habitat that is not regularly scoured by floods. Where this is not possible, rows of stumps or branches under large span bridges can provide cover for smaller animals such as reptiles, amphibians, rodents, and invertebrates; regular visits are needed to replace artificial cover removed by flood. Within culverts, earthen floors are preferred by mammals and reptiles.

5. **Structures should be monitored for, and cleared of, obstructions such as detritus or silt blockages that impede movement.** Small mammals, carnivores, and reptiles avoid crossing structures with significant detritus blockages (Yanes et al. 1995; Cain et al. 2003; Dodd et al. 2004). In the southwest, over half of box culverts less than 8 x 8 ft have large accumulations of branches, Russian thistle, sand, or garbage that impede animal movement (Beier, personal observation). Bridged undercrossings rarely have similar problems.

6. **Fencing should never block entrances to crossing structures, and instead should direct animals towards crossing structures** (Yanes et al. 1995). In Florida, construction of a barrier wall to guide animals into a culvert system resulted in 93.5% reduction in roadkill, and also increased the total number of species using the culvert from 28 to 42 (Dodd et al. 2004). Fences, guard rails, and embankments at least 2 m high discourage animals from crossing roads (Barnum 2003; Cain et al. 2003; Malo et al. 2004). In an area with no large animals, a 3-foot wall with an 18-inch lip projecting into the adjacent open space can direct small wildlife toward crossing structures (Riverside County 2004). One-way ramps on roadside fencing can allow an animal to escape if it is trapped on a road (Forman et al. 2003).

7. **Raised sections of road discourage animals from crossing roads, and should be used when possible to encourage animals to use crossing structures**. Clevenger et al. (2003) found that vertebrates were 93% less susceptible to road-kills on sections of road raised on embankments, compared to road segments at the natural grade of the surrounding terrain.

8. **Manage human activity near each crossing structure**. Clevenger & Waltho (2000) suggest that human use of crossing structures should be restricted and foot trails relocated away from structures intended for wildlife movement. However, a large crossing structure (viaduct or long, high bridge) should be able to accommodate both recreational and wildlife use. Furthermore, if recreational users are educated to maintain utility of the structure for wildlife, they can be allies in conserving wildlife corridors. At a minimum, nighttime human use of crossing structures should be restricted.

9. **Design culverts specifically to provide for animal movement**. Most culverts are designed to carry water under a road and minimize erosion hazard to the road. Culvert designs adequate for transporting water often have pour-offs at the downstream ends that prevent wildlife usage. At least 1 culvert every 150-300m of road should have openings flush with the surrounding terrain, and with native land cover up to both culvert openings, as noted above.

GIS Procedures to Prioritize Conservation Land within a Linkage

Building a set of excellent highway underpasses and overpasses integrated with roadside fencing will not mitigate impacts to wildlife movement if the land between the highway and the nearest wildland is converted to urban uses or other uses incompatible with wildlife occupancy or movement. The goal of GIS analysis is to identify a continuous corridor of land which – if conserved and integrated with underpasses or overpasses across potential barriers – will best maintain or restore the ability of wildlife to move between large protected habitat blocks. Following Beier et al. (2006), we call this proposed corridor a *Linkage Design*.

Noss & Daly (2006) discuss alternative approaches to linkage design. At the low-tech end of the spectrum are what Noss and Daly call "seat of the pants" approaches. These approaches might involve selecting the only remaining route between 2 areas, the most direct route, the route with the largest parcels and willing sellers, the route that incorporates parcels of interest to investors, and a route based on the opinion of a species expert. All of these approaches can be appropriate and effective under some conditions. For instance, the Coal Canyon Biological Corridor, which was added to Chino Hills State Park in 2000, was the only remaining route between the Chino Hills and the Santa Ana Mountains for any wildlife species, and consisted of only 3 parcels. In this case, a seat of the pants approach was appropriate.

Noss and Daly also describe empirical an modeling approaches to linkage design; these are preferred to seat of the pants approaches when the length of the potential corridor is not fully constrained by existing urban barriers. If planners wish to conserve multiple focal species, GIS analyses such as least cost corridor analysis and spatially-explicit population models are the appropriate tools.

Like all models, GIS procedures involve uncertainty and simplifying assumptions, and therefore do not produce absolute "truth" but rather an estimate or prediction of the optimal wildlife corridor. Despite this limitation, there are several reasons to use models instead of maps hand-drawn by species experts or other intuitive approaches:

1. Developing the model forces important assumptions into the open.
2. Using the model makes us explicitly deal with interactions (e.g., between species movement mobility and corridor length) that might otherwise be ignored.
3. The model is transparent, with every algorithm and model parameter available for anyone to inspect and challenge.
4. The model is easy to revise when better information is available.

There are many GIS approaches that can develop a Linkage Design, but, except for the *Least Cost Path* tool in ArcGIS, there are no standardized, named approaches. Even the *Least Cost Path* tool assumes the analyst has developed a cost-surface layer, for which there is no standard approach. About 15 scientific papers – all published in the last 10

years – use GIS procedures to develop a Linkage Design (Walker & Craighead 1997, Quinby et al. 1999, Hoctor et al. 2000, Graham 2001, Servheen et al. 2001, Bani et al. 2002, Schadt et al. 2002, Singleton et al. 2002, Joly et al. 2003, Sutcliffe et al. 2003, Kramer-Schadt et al. 2004, Wikramanayake et al. 2004, Marulli and Mallarach 2005, Williams et al. 2005, Beier et al. 2006). However, each paper focuses on the resulting Linkage Design - the GIS procedures are never the main point of the paper. Indeed, no paper fully explains the many choices made during the analysis.

In Figure 2 we provide a flow chart illustrating most of the options involved in creating a GIS-based Linkage Design[2]. Some of the options are conceptually possible, but have not been put into practice. Other choices probably have little impact on the Linkage Design; however, except for Newell and Beier (In Prep), no published sensitivity analyses address how these choices affect the ultimate map. Here we briefly discuss the choices; the numbers below correspond to numbers in the flow chart (Figure 2).

1. Almost all studies estimate travel cost using literature review and expert opinion. There are potential alternatives, but to date they are untested and perhaps not feasible: (a) Gerlach and Musolf (2000) and Epps et al. (2005), respectively, used genetic analysis to estimate the travel cost of rivers on vole movement and of highways on bighorn movement. However, their analyses assumed that each pixel of matrix could be assigned to one of two cost classes (one for the river or highway, one for all other matrix pixels). Their approach would not yield unique estimates if the matrix were modeled as having multiple classes. (b) Travel cost could theoretically be measured from documented rates of interpatch movement (e.g., Sutcliffe et al. 2003). However if the landscape contains more than a handful of habitat classes, thousands of combinations of costs are consistent with the observed interpatch movement or genetic patterns (Sutcliffe et al. 2003). Furthermore, unless the researcher samples the entire geographic range of the species or metapopulation, estimates will be distorted due to (unmeasured) movements or gene flow from patches outside the study area but within the interacting group of patches. (c) Individual-based movement models are another promising alternative, but so far have been used only in a landscape with 150-m long corridors (Levey et al. 2005), and have not been used to estimate travel cost.

2 This figure and much of the related discussion will form the basis of a paper in preparation by Beier and colleagues. Ovals indicate choices the analyst must make. Line 2 lists land cover, elevation, topography, and distance to roads (or road density) as the driving factors, but the analyst may use only a subset of these, or may add other factors if GIS coverage is available.

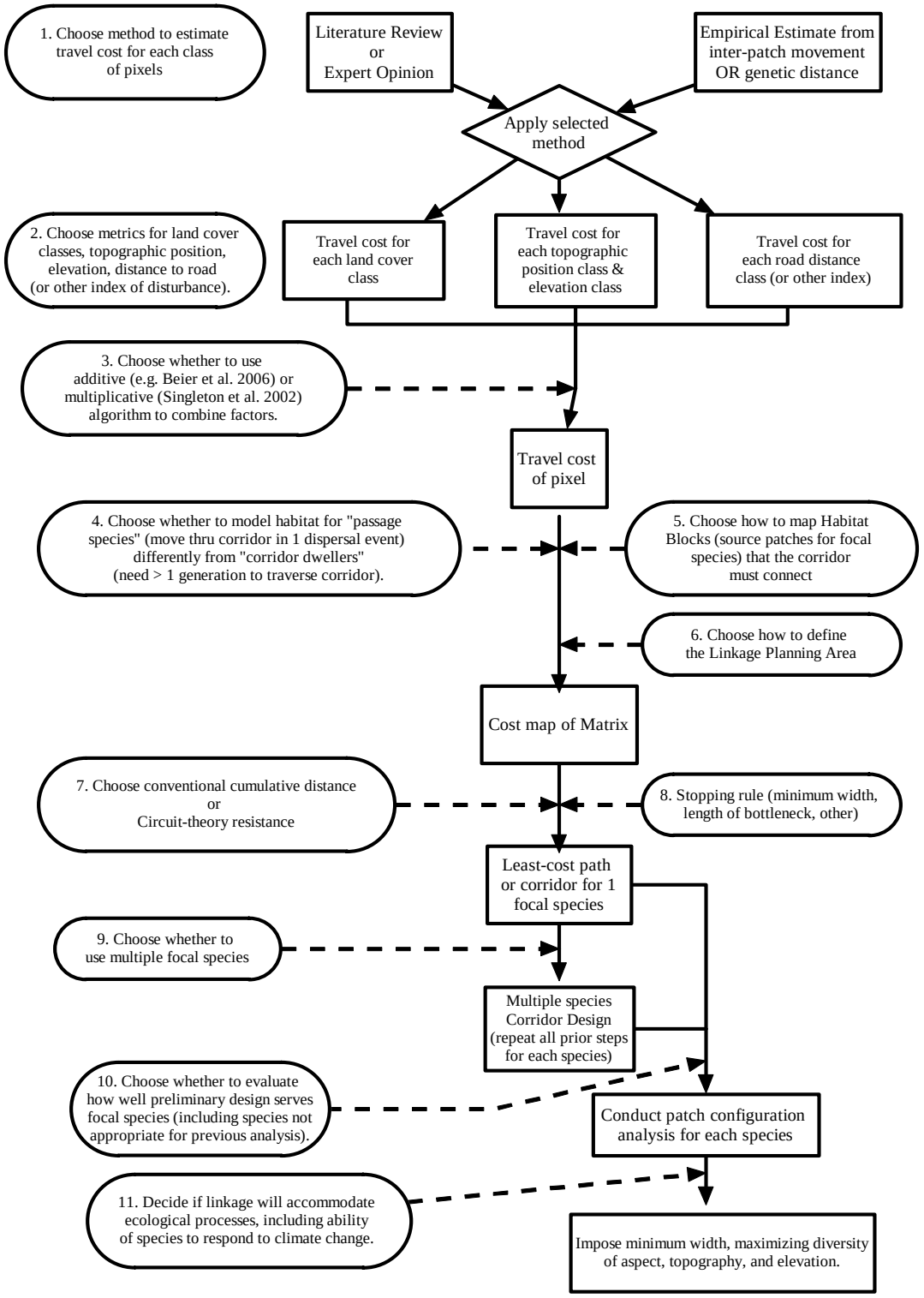

Figure 2. Generalized flow chart for GIS-based corridor design.

2. Typically, GIS models predict travel cost based on some or all of 4 factors: land cover (vegetation and land use classes), elevation, topography, and proximity to roads. Theoretically, one could use other factors but in practice, these are the only 4 widely-available GIS layers. Once the factors are selected, the analyst estimates the cost associated with each class using the method selected in #1. Newell and Beier (in prep) found that uncertainty in the cost estimates did not greatly affect the predicted best corridor of most species, but had an enormous impact for a few species.

3. The cost scores for land cover, elevation, proximity to roads, and topography can be combined as a weighted sum or a weighted product. The multiplicative model better reflects the possibility that one factor (e.g., proximity to roads) may limit wildlife movement in a way that cannot be compensated by a better score for another factor (e.g., land cover). Beier and Majka (Northern Arizona University, personal observation) find that this choice does not have a major impact on the Linkage Design.

4. Only Beier and colleagues (in 8 linkage designs produced for Arizona Game and Fish Department in 2006) have added a special procedure to model movement by species that require multiple generations to move through a corridor. Their procedure assigns an arbitrarily low travel cost to any group of contiguous pixels of sufficient quality and size to support breeding by the focal species. This procedure tends to produce a corridor that runs between steppingstones of breeding habitat, and substantially improves the Linkage Design. Although a similar improvement can be achieved via Patch Configuration Analysis (#10), recognizing the value of breeding patches early in the analysis is more efficient and less subjective.

5. The Linkage Design is profoundly affected by how the analyst delineates the habitat patches to be linked. The analyst might choose to have the linkage connect only to lands with the strongest conservation mandate, such as designated wilderness areas, Research Natural Areas, and Preserves managed by The Nature Conservancy. The analyst might also delineate habitat blocks to include National and State Parks, National Forest land, BLM land, military land, Bureau of Reclamation Land, and Native American reservations. There is no “right” answer to this issue but it seems reasonable that the areas to be connected should be likely to remain wild for at least 50 years. A closely related issue is whether the corridor for a single species should connect to any part of the protected habitat block (a common practice), or only to a large patch of suitable breeding habitat within the protected habitat. The latter seems more reasonable and involves relatively little additional work, and is standard on Linkage Designs produced by South Coast Wildlands and the Arizona Missing Linkages project at Northern Arizona University.

6. The GIS analyst cannot consider all possible travel paths on the planet, continent, or ecoregion, but is limited to a (usually rectangular) analysis area. Cumulative travel cost is calculated only for pixels within this Linkage Planning Area. As long as the Linkage Planning Area includes the boundary of each habitat block that "faces" the other habitat block and does not exclude any patches of high-quality habitat for the focal species, practitioners assume that this decision has little impact on the linkage design.

7. A circuit-theory resistance model was recently developed to model gene flow via multiple pathways (McRae, In Press), but has not yet been applied to Linkage Designs. It has some theoretical advantages and may become a useful tool in the future.

8. The swath of pixels with the lowest ecological cost is the best corridor for each species. However, the analyst must choose how wide the swath needs to be. The Least Cost Path tool in ArcGIS can identify a strand exactly one pixel wide between the habitat blocks – clearly too narrow to serve most species. An arbitrary minimum width (say ¼ mile) seems attractive, but often exceptions must be made for existing bottlenecks, such as those created by existing urban areas. Regardless of what rule is selected to stop adding pixels to the corridor, this is a labor-intensive part of the process, as the procedure cannot be fully automated, but must be done interactively.

9. Thus far, the procedure produces a biologically-best corridor for a single species. In most cases, conservation planners will want to design a corridor to serve multiple species and ecological processes. Analyzing a southern California linkage designed using 8 focal species, Newell and Beier (in prep.) found that the single-species corridors for carnivores (mountain lion, badger, and kit fox) were not good umbrellas for the other 5 species – there was no substitute for multi-species modeling if one wants to ensure connectivity for multiple species.

10. The GIS procedure will always produce a biologically best corridor – even if the best corridor is entirely inadequate for the focal species. Some sort of spatially-explicit population model is needed to evaluate the biologically best corridor. Beier and colleagues developed "patch configuration analysis" as a relatively simple procedure for this purpose. The procedure basically maps patches of habitat of high quality (breeding) habitat large enough to support breeding pairs and small populations, and overlays these on the draft corridor design. The analyst evaluates these patches with respect to the species dispersal distance and the draft corridor design.

11. Impose a minimum width. Wide linkages are beneficial because they (1) provide adequate area for development of metapopulation structures necessary to allow corridor-dwelling species (individuals or genes) to move through the landscape; (2) reduce pollution into aquatic habitats; (3) reduce edge effects such as pets, lighting, noise, nest predation & parasitism, and invasive species; (4) provide an opportunity to conserve natural fire regimes and other ecological processes; and (5) improve the opportunity of biota to respond to climate change

Illustration: Approach Used by South Coast Missing Linkages and Arizona Wildlife Linkage Workgroup

These 11 analytic decisions (Figure 2) can give rise to a very large number of alternative GIS approaches. One approach has been used by South Coast Wildlands and 25 partners in the South Coast Missing Linkages project to design 16 linkages in southern California during 2001-2006. This approach has been modified for use in 24 linkage designs in the state of Arizona by the Arizona Wildlife Linkage Workgroup during 2005-2008. We outline that approach in this section. To provide a consistent tense and minimize length, the description is written as a set of instructions (do this, then do this).

The approach uses GIS approaches to identify optimal travel routes for focal species representing the ecological community in the area. By carefully selecting a diverse group of focal species and capturing a range of topography to accommodate climate change, the Linkage Design should ensure the long-term viability of all species in the protected areas. The approach includes the following steps:

1. Select focal species.

2. Create a habitat suitability model for each focal species.

3. Join pixels of suitable habitat to identify potential breeding patches & potential population cores (areas that could support a population for at least a decade).

4. Identify the biologically best corridor (BBC) through which each species could move between protected core areas. Join the BBCs for all focal species.

5. Ensure that the union of BBCs includes enough population patches and cores to ensure connectivity for the focal species.

6. Expand the linkage to a minimum width.

7. Carry out field visits to identify barriers to movement and the best locations for underpasses or overpasses within Linkage Design area.

Focal Species Selection

Use a focal species approach (Lambeck 1997) to represent the needs of the ecological community within the potential linkage area. Invite regional biologists familiar with the region to identify 10-20 species with one or more of the following characteristics:

- habitat specialists, especially habitats that may be relatively rare in the potential linkage area.
- species sensitive to highways, canals, urbanization, or other potential barriers in the potential linkage area, especially species with limited movement ability.
- area-sensitive species that require large or well-connected landscapes to maintain a viable population and genetic diversity.
- ecologically important species such as keystone predators, important seed dispersers, herbivores that affect vegetation, or species that are closely associated with nutrient cycling, energy flow, or other ecosystem processes.
- species listed as threatened or endangered under the Endangered Species Act, or species of special concern to Arizona Game and Fish Department, US Forest Service, or other management agencies.

Construct corridor models for some, but not all, focal species. Do not model species for which there are insufficient data to quantify habitat use in terms of available GIS data (e.g., some snakes that select small rocks), or if the species probably can travel (e.g., by flying) across unsuitable habitat.

Habitat Suitability Models

Create habitat suitability models (Appendix A) for each species by estimating how the species responds to four habitat factors mapped at a 10x10m or 30x30 m level of resolution (Figure 3):

- *Vegetation and land cover*. Use the best seamless map available. If desired, merge some classes to create <50 vegetation & land cover classes.
- *Elevation:* the USGS National Elevation Dataset digital elevation model.
- *Topographic position.* Characterized each pixel as ridge, canyon bottom, flat to gentle slope, or steep slope.

- *Straight-line distance from the nearest paved road or railroad.* Distance from roads reflects risk of being struck by vehicles as well as noise, light, pets, pollution, and other human-caused disturbances. Either road density or distance to road can be used. There are problems with each.

To create a habitat suitability map, assign each of the 46 vegetation classes (and each of 4 topographic positions, and each of several elevation classes and distance-to-road classes) a score from 1 (best) to 10 (worst), where 1-3 is optimal habitat, 4-5 is suboptimal but usable habitat, 6-7 may be occasionally used but cannot sustain a breeding population, and 8-10 is strongly avoided. Whenever possible, recruit biologists with the greatest expertise in each species to assign these scores. If no expert is available for a species, three biologists independently assign scores and, after discussing differences among their individual scores, adjust their scores before the three scores are averaged. Regardless of whether the scores were generated by a species expert or project staff, the scorer should review the literature on habitat selection by the focal species before assigning scores[3].

This scoring produces 4 scores (land cover, elevation, topographic position, distance from roads) for each pixel, each score being a number between 1 and 10. Then weight each of the 4 factors by a weight between 0% and 100%, subject to the constraint that the 4 weights must sum to 100%, and add the 4 weighted scores to produce an overall habitat suitability score, also scaled 1-10. Use these habitat suitability scores to create a habitat suitability map that form the foundation for the later steps.

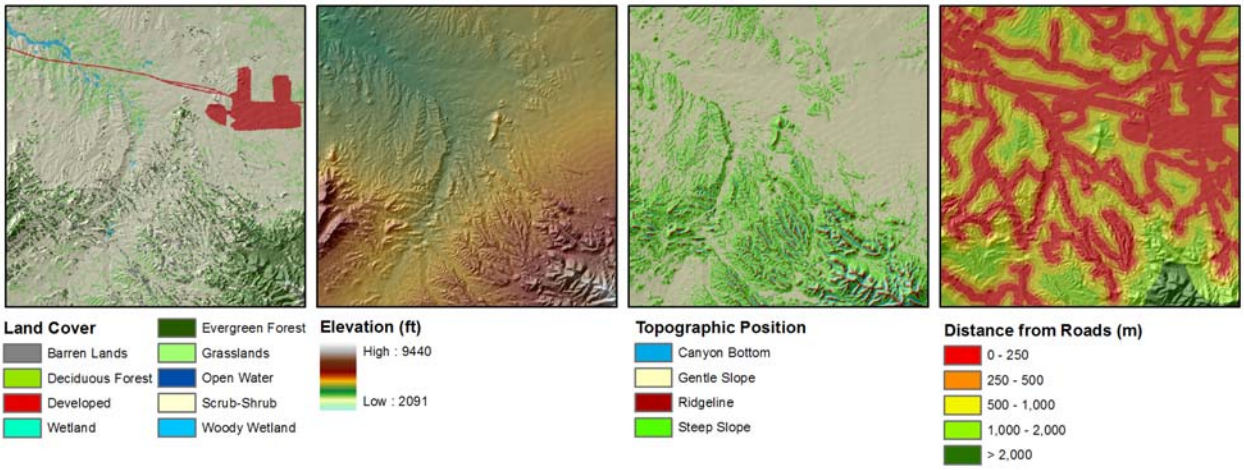

Figure 3: Four habitat factors used to create habitat suitability models. Inputs included vegetation, elevation, topographic position, and distance from roads.

3 Clevenger et al. (2002) found that literature review significantly improved the fit between expert scores and later empirical observations of animal movement.

If necessary, use additional factors critical for a particular species, such as a minimum slope needed as escape terrain for bighorn sheep, or proximity to water for frogs. To create a habitat suitability model using critical features, reclassify any pixel beyond a specified threshold distance from the critical feature as unsuitable for breeding (score > 5). This is accomplished by the equation:

New habitat score for pixel beyond threshold distance = (½ of original habitat score) + 5

Therefore, if a pixel of habitat *beyond* the threshold distance from a critical feature had an original habitat score of 1 (optimal habitat), it receives a reclassified score of 5.5 (usable, but not breeding habitat). Likewise, unsuitable habitat located outside of the threshold distance remains unsuitable: an original score of 9 is reclassified as 9.5. All pixels of habitat *within* the threshold distance of a critical feature maintain their original habitat score.

Identifying Potential Breeding Patches and Potential Population Cores

The habitat suitability map provides scores for each pixel. The analyst needs to identify – both in the Habitat Blocks and in the Potential linkage area – areas of good habitat large enough to support reproduction. Specifically, the analyst needs to identify

- *potential breeding patches*: areas large enough to support a breeding unit (individual female with young, or a breeding pair) for one breeding season. Such patches could be important stepping-stones for species that are unlikely to cross a potential linkage area within a single lifetime.

- *potential population cores*: areas large enough to support a breeding population of the focal species for about 10 years.

To do so, first calculate the suitability of any pixel as the average habitat suitability in a neighborhood of pixels surrounding it (Figure 4). Calculate average habitat suitability within a 3x3-pixel neighborhood (0.81 ha) for less-mobile species, and within a 200-m radius (12.6 ha) for more-mobile species[4]. Thus each pixel has both a *pixel score* and a *neighborhood score*. Then join adjacent pixels of suitable habitat (pixels with neighborhood score < 5) into polygons that represented potential breeding patches or potential population cores. The minimum sizes for each patch type are specified by the biologists who provided scores for the habitat suitability model.

4 An animal that moves over large areas for daily foraging perceives the landscape as composed of relatively large patches, because the animal readily moves through small swaths of unsuitable habitat in an otherwise favorable landscape (Vos et al. 2001). In contrast, a less-mobile mobile has a more patchy perception of its surroundings. Similarly, a small island of suitable habitat in an ocean of poor habitat will be of little use to an animal with large daily spatial requirements, but may be sufficient for the animal that requires little area.

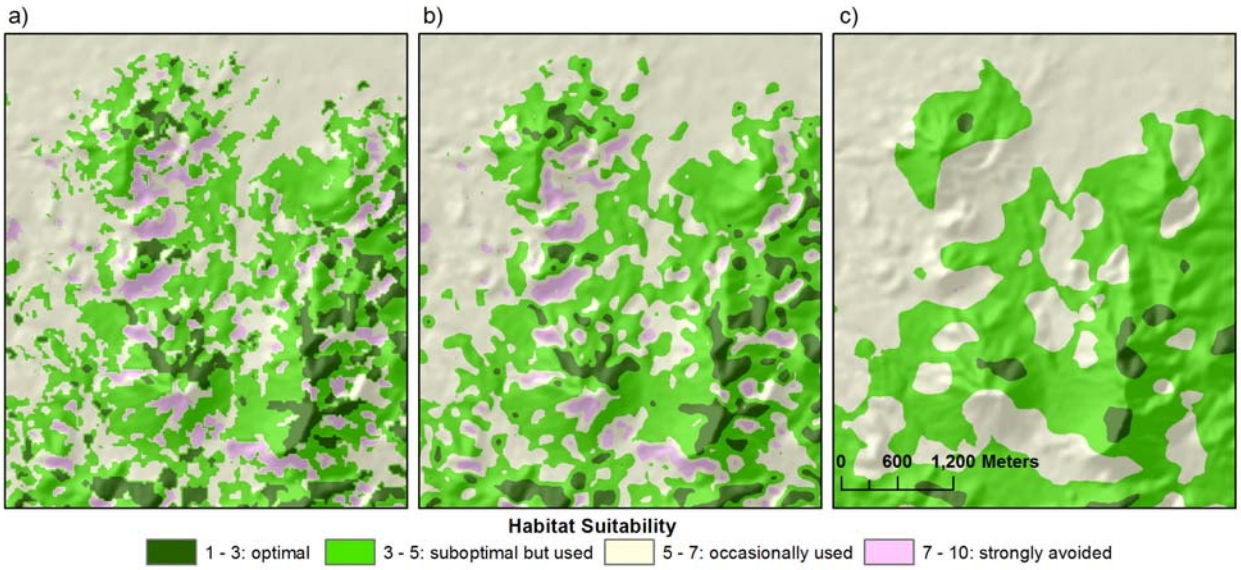

Figure 4: Example moving window analysis which calculates the average habitat suitability surrounding a pixel. a) original habitat suitability model, b) 3x3-pixel moving window, c) 200m radius moving window

Identifying Biologically Best Corridors

The *biologically best corridor*[5] (BBC) is a continuous swath of land that is predicted to be the best (highest permeability, lowest cost of travel) route for a species to travel from a potential population core in one protected habitat block to a potential population core in the other protected habitat block. *Travel cost* increases in areas where the focal species experiences poor nutrition or lack of suitable cover. *Permeability* is simply the opposite of travel cost, such that a perfectly permeable landscape would have a travel cost at or near zero.

Develop BBCs only for some focal species, namely species that (a) exist in both protected habitat blocks, or have historically existed in both and could be restored to them, (b) can move between protected blocks in less time than disturbances such as fire or climate change will make the current vegetation map obsolete, (c) move near the ground through the vegetation layer (rather than flying, swimming, or being carried by the wind), and (d) have habitat preferences that can reasonably be represented using GIS

5 This approach has often been called Least Cost Corridor Analysis (Beier et al. 2006) because it identifies areas that require the least cost of travel (energetic cost, risk of mortality) to the animal. However, the words "least cost" are easily misunderstood as referring to the dollar cost of conserving land or building an underpass.

variables. For focal species that did not meet these criteria, conduct patch configuration analysis (next section).

To define the start and end points for a corridor, identify potential population cores and habitat patches that fall completely within each protected habitat block. If potential population cores exist within each block, use these potential cores as the starting & ending points for the corridor analysis. Otherwise, the start-end points should be potential habitat patches within the protected habitat block or (for a wide-ranging species with no potential habit patch entirely within a habitat block) any suitable habitat within the protected block.

To create each biologically best corridor, use the habitat suitability score as an estimate of the cost of movement through the pixel6. Use these three rules to transform habitat suitability scores into travel costs, depending on ecological characteristics of the species:

- For a *locally widespread species* (habitat suitability score < 5 in nearly all of the potential linkage zone, suggesting that breeding populations could occur throughout), use the raw pixel habitat suitability score as the travel cost score.

Assign species not widespread throughout the potential linkage area into 1 of 2 groups:

- For *corridor-dwelling species* (species needing weeks to generations to traverse the potential linkage area – including most reptiles, amphibians, and small mammals)7, reassign a score of 1 to each pixel in a potential habitat patch or potential population core. The rationale is that these areas provide steppingstones for multi-generational movement. Do not rescore single pixels, or polygons smaller than a potential breeding area, because these are too small to provide meaningful stopover habitat.

- For *passage species* (mobile species that can make the journey between protected habitat blocks in a single movement event of a few hours or days), assign each pixel with a pixel habitat suitability score of 1 through 5 a travel cost score of 1. In models that lacked this rescoring, the biologically best corridor tended to follow an unrealistic straight line rather than best habitat.

For each pixel, calculate the lowest cumulative cost to that pixel from a starting point in one protected habitat block. Similarly calculate the lowest cumulative travel cost from the 2nd protected habitat block, and add these 2 travel costs to calculate the *total travel cost* for each pixel. The total travel cost thus reflects the lowest possible cost associated with a path between habitat blocks that passes through the pixel.

6 Levey et al. (2005) provide evidence that animals make movement decisions based on habitat suitability.
7 Beier & Loe (1992) introduced this distinction between *passage species* and *corridor-dwelling* species.

Finally, define the biologically best corridor as the swath of pixels with the lowest total travel cost and a minimum width of 500 m (Figure 5). If a species has two or more distinct strands in its biologically best corridor, eliminate any strand markedly worse than the best strand, but retain multiple strands if they have roughly equal travel cost and spacing among habitat patches.

After developing a biologically best corridor for each species, combine biologically best corridors to form a union of biologically best corridors (UBBC).

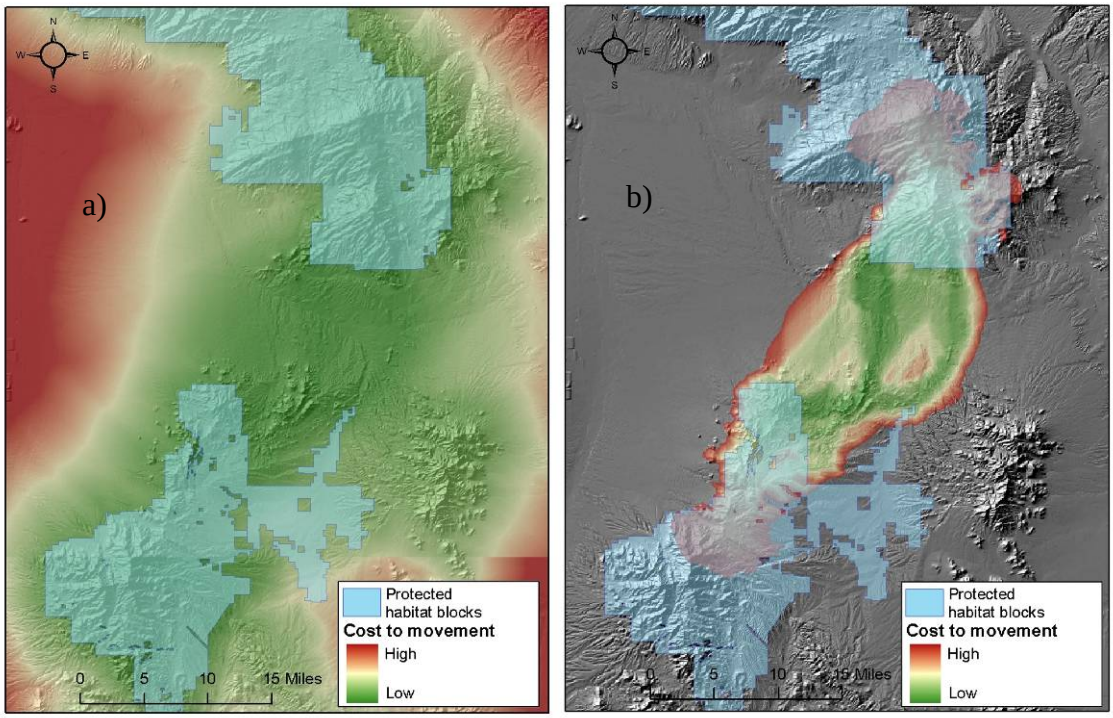

Figure 5: a) Landscape permeability layer for entire landscape, b) biologically best corridor composed of most permeable 10% of landscape.

Patch Configuration Analysis

Although the UBBC identifies an optimum corridor between the protected habitat blocks, this optimum might be poor for a species with little suitable habitat in the potential linkage area. Furthermore, corridor analyses were not conducted for some focal species (see 2nd paragraph of previous section). To address these issues, examine the maps of potential population cores and potential habitat patches for each focal species (including species for which a BBC was estimated) in relation to the UBBC. For each species, examine whether the UBBC encompasses adequate potential habitat patches and potential habitat cores, and compare the distance between neighboring habitat patches to the

dispersal[8] distance of the species. For those species (*corridor-dwellers*, above) that require multiple generations to move between protected habitat blocks, a patch of habitat beyond dispersal distance will not promote movement. For such species, look for potential habitat patches within the potential linkage area but outside of the UBBC. When such patches are within the species' dispersal distance from patches within the UBBC or a habitat block, add these polygons to the UBBC to create a *preliminary linkage design*.

Minimum Linkage Width

Wide linkages are beneficial for several reasons outlined above. To address these concerns, establish a minimum width of 1.5 km (0.94 mi) along the length of each terrestrial branch of the preliminary linkage design, except where existing urbanization precludes such widening. Widen bottlenecks first by adding natural habitats, and then by adding agricultural lands if no natural areas are available.

It is especially important that the linkage will be useful in the face of climate change. Climate change scientists unanimously agree that average temperatures will rise 2 to 6.4 C over pre-industrial levels by 2100, and that extreme climate events (droughts and storms) will become more common (Millennium Ecosystem Assessment 2005). Although it is less clear whether rainfall will increase or decrease in any location, there can be no doubt that the vegetation map in 2050 and 2100 will be significantly different than the map of current vegetation used in today's analyses. Implementing a corridor design narrowly conforming to current distribution of vegetation types would be risky. Therefore, in widening terrestrial linkage strands, attempt to maximize local diversity of aspect, slope, and elevation to provide a better chance that the linkage will have most vegetation types well-distributed along its length during the coming decades of climate change. Because of the diversity of focal species used to develop the UBBC, the preliminary linkage design will probably have great of topographic diversity, and minimal widening will be needed.

Expanding the linkage to this minimum width produces the final linkage design.

Field Investigations

Although these analyses consider human land use and roads, the GIS layers only crudely reflect important barriers that are only a pixel or two in width, such as freeways, canals, and major fences. Therefore visit each linkage design area to assess such barriers and identify restoration opportunities. Document areas of interest using GPS, photography, and field notes. Evaluate existing bridges, underpasses, overpasses, and culverts along highways as potential structures for animals to cross the highway, or as locations where improved crossing structures could be built. Note recent (unmapped) housing & residential developments, major fences and artificial night lighting that could impede

8 Dispersal distance is how far an animal moves from its birthplace to its adult home range. We used dispersal distances reported by the species expert, or in published literature. In some cases, we used dispersal distance for a closely-related species.

animal movement, and opportunities to restore native vegetation degraded by human disturbance or exotic plant species.

Helping Non-scientists Understand the Biological Value of Alternative Corridor Designs

The Linkage Design above provides a biological optimum. Various practical constraints will often require deviation from this biologically optimum design. During implementation of corridor designs, a diverse group of stakeholders must consider and compare alternative designs. Agencies making conservation investments prefer to buy large parcels from willing sellers, and developers will propose alternative corridor designs that do not affect their lands.

These alternative maps will differ from the biological optimum. How can decision-makers compare alternatives to the optimum, and know when to settle for "good enough"? The GIS analyst can calculate cost-distance for each alternative. But unfortunately, a 20% increase in cost-distance does not necessarily correspond to a 20% increase in animal mortality or a 20% decrease in gene flow. In other words, cost-distance is not a useful metric for comparison. Instead, we suggest histograms (e.g., of bottleneck lengths, bottleneck widths) and other metrics (e.g., average habitat suitability scores for each focal species, distances between suitable habitat patches within the linkage) to illustrate differences among alternative corridor designs. South Coast Wildlands and Arizona Wildlife Linkage Workgroup are currently developing such metrics and testing them on focal audiences.

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Attachment F: Examples of Park and Recreation Land Standards (Land to Population Ratios)

Source	Park/Recreation Lands	Mini Park			Neighborhood (Local) Park			Community Park			Large Urban Park			Sports Complex			Regional Park		
	ac/1000 residents	Size	Service Area (radius)	ac/1000 residents	Size	Service Area (radius)	ac/1000 residents	Size	Service Area (radius)	ac/1000 residents	Size	Service Area (radius)	ac/1000 residents	Size	Service Area	ac/1000 residents	Size	Service Area	ac/1000 residents
State of California	3 ac/1000																		
National Recreation and Parks Association	10 ac/1000	2500SF-1 ac	<1/4 mi		5-10ac	1/4-1/2 mi	1.5 ac/1000	30-50 ac	1/2-3mi	2.5 ac/1000	30ac-50ac	varies	5 ac/1000	25-80 ac	varies				
City of Brea	5 ac/1000	1/2-5ac	<1/4 mi		5-10ac	1/4-1/2 mi		20-50+ac	1/2-3mi					20-50+ ac	1/2-3 mi		50 ac+		
City of Fontana		<1 ac	<1/4 mi		10-20ac	1/2-1mi		20-40ac	1-2 mi								100 ac+		
City of Dana Point	4 ac/1000																		
City of Ventura	10 ac/1000				<8 ac		2 ac/1000	100ac		3 ac/1000			5 ac/1000						
San Diego General Plan Update 2005	2.4 ac/1000				10 ac	1/2 mi	1.6 ac/1000	20 ac	1 1/2 mi	.8 ac/1000									
City of Rocky Mount		1-3ac		.5ac/1000	10-20ac		2 ac/1000	50-100ac		3 ac/1000				80-150 ac		2 ac/1000	150 -250 ac		3 ac/1000
King County, WA					10 ac	1/2 mi	7.5 ac/1000 (urban areas) 4 ac/1000 (rural areas)												

Attachment G: Summary of Select Urban Forestry Programs

*For additional information on urban forestry see www.ufei.org, www.caufc.org, and www.fs.fed.us/psw/programs/cufr.

Program	Area of Effect	Implementing Organization	Program/Project Description	Measurable Outcomes
Community Forest Management Plan (in conjunction with the Sustainable City Program)	Santa Monica	City of Santa Monica	Santa Monica's community forest is comprised of 32,771 trees located in public areas throughout the community. The Community Forest Management program includes tree planting, inspection, trimming and removal, and community education to encourage public stewardship of public and private trees. Open Space Management staff review and field check construction plans for street tree code requirements, review landscape and irrigation plans for city projects and inspect those projects during construction. The City has developed a Community Forest Management Plan that includes objectives and policies. The program is central to achieving the objectives of the Sustainable City Program.	The objectives of the program are: to maintain the city's current tree inventory, develop an inter-departmental process that optimizes tree planting, and to implement a public education program. In addition, the number of trees identified in the city transfers into hard energy consumption savings, stormwater runoff reduction, and air quality improvements and these benefits could be measured based on research conducted by the Center for Urban Forest Research.

Program	Area of Effect	Implementing Organization	Program/Project Description	Measurable Outcomes
T.R.E.E.S Project	Los Angeles and environs	TreePeople	TreePeople manages a range of ongoing tree planting and education programs throughout the Los Angeles area. Their programs include community and campus tree planting events, mountain forestry planting events to plant seedlings in the National Forests and wilderness areas, and other volunteer tree planting, care and trails restoration events.	No specific measurable goals are identified for the TreePeople's programs. However, the number of trees planted transfers into hard energy consumption savings, stormwater runoff reduction, and air quality improvements and these benefits could be measured based on research conducted by the Center for Urban Forest Research.
Trees for a Green LA	Los Angeles	Los Angeles Department of Water and Power (LADWP)	Trees for a Green LA is an ongoing program to provide shade trees to Los Angeles residents (single- and multi-family) and businesses to achieve energy savings and environmental benefits. The Los Angeles Conservation Corps coordinates neighborhood workshops, which are led by trained workshop leaders from various Los Angeles Community-Based Organizations. Participants must be LADWP customers, attend a brief planting and maintenance workshop, submit a tree order and planting site plan, and the trees are delivered to the applicant's residence/facility.	An independent analysis, conducted by the U.S. Department of Agriculture Forest Service, indicated that for every dollar spent, approximately $17.50 will be returned as avoided costs for energy supply and air pollution control. This total also takes into account the other environmental and social benefits associated with planting trees, such as increased property value and scenic quality, and improved human health and well being. The average annual energy savings per tree planted is estimated to total 81 kilowatt-hours and 1,500 gallons of avoided stormwater runoff.
United Voices for Healthier Communities	South Coast Air Quality Management District	California Urban Forest Council (CaUFC)	United Voices for Healthier Communities is a new program that will coordinate the planting of a minimum of 1,000 trees each in San Bernardino, Riverside, and Orange Counties through cooperation with public agencies and community groups. All trees will be planted by volunteers as an Arbor Day/ Earth Day region-wide event on April 21,2007.	The program goal is to plant a total of 3,000 shade trees. The project is estimated to remove: 1,530 tons of CO2 and 12,900 pounds of pollutants including 2,160 pounds of ozone, and 2,430 pounds of particulates, each year.

Program	Area of Effect	Implementing Organization	Program/Project Description	Measurable Outcomes
Cool Schools	Los Angeles	Northeast Trees (funded by LADWP)	Cool Schools is a citywide program focused on planting shade trees at public schools within the Los Angeles Unified Schools District to save energy, improve air quality and provide environmental education. Participating schools benefit from additional shade trees on their campus as well as educational programs delivered to individual classrooms, teaching care for young trees and the benefits of trees.	To date, 33 schools have participated in the program throughout the Los Angeles area.
Cool Communities Shade Tree Program	San Diego/ Southern Orange County	San Diego Regional Energy Office (SDREO)	The SDREO tree-planting program provides shade trees to San Diego Gas and Electric (SDG&E) residential customers to achieve energy savings and other environmental benefits. SDREO, in cooperation with People for Trees, a San Diego-based non-profit community organization, coordinates tree planting and maintenance workshops and planting events. Participants must be SDG&E customers, submit a tree order and planting site plan, and attend a community planting event that includes a brief planting and maintenance workshop. Trees are delivered to each applicant's residence approximately the day of the planting event.	The program has planted over 24,500 shade trees to date. The project is estimated to remove a total of: 1.2 million tons of CO2 and 245,000 pounds of pollutants including ozone, particulates, and nitrogen oxides. Trees planted translate into 4,165 kW of annual demand reduction and 3.8 kWh of annual energy savings. The program is also estimated to have saved $135,000 is storm water runoff benefits.